# 撮ま！ ～アニメーターのための撮影基礎知識～ 【準備号】
# Satsuma! Filming Fundamentals for Animators [Draft]

It all started when the company I worked for decided to create a lecture for Photography Terms. The veteran Genga-man wouldn't remember the new things available after the Digital Era, and the newcomer Genga-man wouldn't understand the Film Era pipeline. From the perspective of the Filming Department, I had a strong feeling that *this has to change*. The aim is to teach the Film Era Terms while laying out the instructions of the Digital Era that are easy to understand and still useful today. This is the start of the Filming Term Lecture. This lecture is to reconfirm the terms and instructions used within the company, and to firmly understand the meaning of the terms for smoother communication so that there are no mistakes in the process for the next step in the production.

During the Film Era, there was a wonderful book called *Filming Technique Manual for Animators* (アニメーターのための撮影技術の手引き) by Eien Roran 映産労. However, it's unexpectedly not well known, and young Genga-man might not know the existence of this book. *Satsuma!* aims to be like Eien's book, and aims to create a common recognition in not just within the company, but the whole Industry. The aim is to help put every part of the production on the same page, and to have smooth communication throughout.

The point is to *communicate clearly* not *it's fine if it was understood*. If you think, *"it's fine as long as the Filming Department understands it"*, you are thinking incorrectly. If the communication is not properly done, the overseas or newbie Douga-man will make a mistake. In addition, making sure all Departments are able to imagine/predict the final look of the product will become a strength in filmmaking. Therefore, understanding the Douga, Finishing, Art, and Production processes are essential.

One thing that I felt as a result of working in the Finishing Department is that there is a risk of forgetting the real meaning of terms when you keep omitting them. This seems to be the reason why filming instructions are all willy nilly. For example, terms like *Exposure* or *Multi-Plane* are most effective if you have knowledge of Camera, Lens and Film Techniques. I believe it's important to learn and understand the *meaning* of formulas, not just *memorize* them.

Furthermore, the information contained here is under the assumption of using *Adobe After Effects* without any special plugins. In other words, this book only deals with the basic parts of *After Effects*. Although I say, *"basic"*, each studio has their own style, so I will not simply say, *"this way is the only way!"* I hope to complement parts you are unsure of in the use of Filming Terms. I hope you can understand that this is to spread the method that is best used without considering any one style in a studio.

On top of that, I hope this book provides a chance for you to review that which you were confident on, as well as create common grounds for those you were not.

**《 Things to be Aware of While Using *Satsuma!* 》**

★ This book is still incomplete. There are things I couldn't touch on, and there might be some parts that are incorrect. I do plan to publish a revised version around once per half a year from now on.

★ Please give any feedback such as, *"please explain this and add it"* or, *"this is wrong"*, or even, *"this person's explanation is easier to understand"*. This will become a real manual with everyone's feedback.

★ Some terms include "a term indicating motion in *Staging (eg: Follow)*" and, "a term indicating motion in *Filming (eg: Daibiki)*". Please identify and use these words properly.

★ The Filming Format used in the images is 4:3. This is because the drawings would get so small in 16:9 that the explanation paired with it was hard to understand. I might redraw them later, but for now I published as is. Please keep this in mind.

Please always hold onto the latest version of this book.



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# 【Basics】

## ■ Timesheet • Exposure Sheet（タイムシート・エクスポージャーシート）

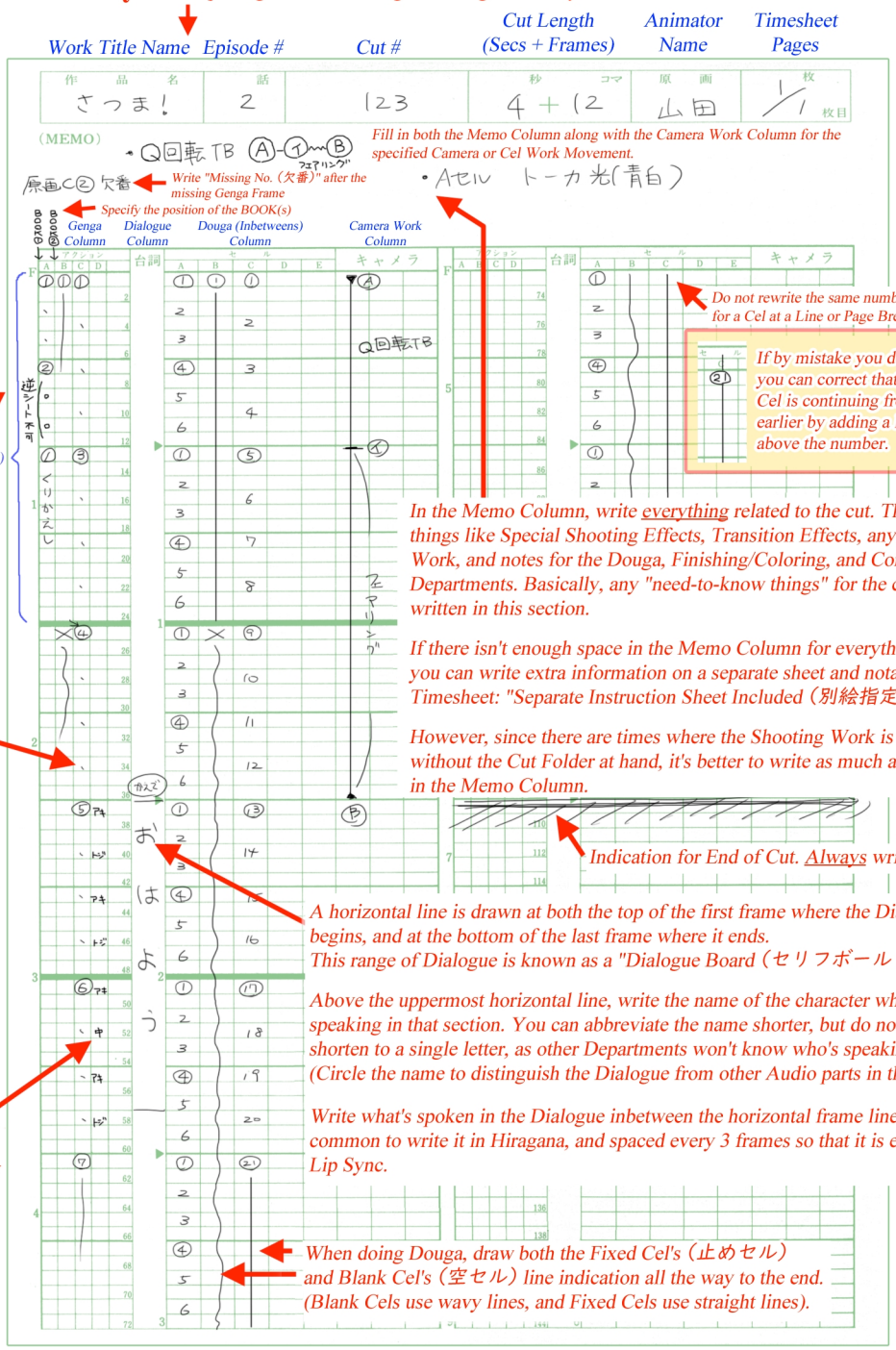
The *Timesheet* is a 24 frames/sec work slip filled by the Staging and Sakuga staff. This is the blueprint necessary for Staging, Animating, Coloring/Finishing, and Filming/Compositing to progress the production smoothly.

★ **Make sure to write neatly!**

*Write all info again into each subsequent Timesheet, as it will help keep things from becoming confusing and messy!*

★How to Handle Multiple Sheets★

*During the Film Era, it was common to staple documents together, but with the advent of Digital Photography (and the ability to use a Sorter to easily scan and copy), it's not recommended to use a stapler for documents anymore.*


Work Title Name
Episode #
Cut #
Cut Length (Secs + Frames)
Animator Name
Timesheet Pages
さつま！
2
123
4 + 12
山田
1 / 1
(MEMO)
Q回転 TB
Write "Missing No. (欠番)" after the missing Genga Frame
Specify the position of the BOOK(s)
Genga Column
Dialogue Column
Douga (Inbetweens) Column
Camera Work Column
Fill in both the Memo Column along with the Camera Work Column for the specified Camera or Cel Work Movement.
Do not rewrite the same number again for a Cel at a Line or Page Break.
If by mistake you do, you can correct that the Cel is continuing from earlier by adding a line above the number.
Time flows vertically. The Starting Frame is at the top, and time progresses downwards, one frame per row.
1 second (24 Frames)
Specify the materials (layers) horizontally. The left most layer is the lowest, and as layers move to the right (and get closer to the camera) they overlap the ones behind them.
The dash marks are drawn during Layout/ Genga, indicating drawings to be done by Douga (Inbetween Animators). These marks are called "Douga Symbols（動画記号・中割り記号）".
When there are inbetweens for Lip Syncing, you can write a note specifying the position: open（アキロ）, halfway（中ロ）, or closed（トジロ）. This is especially important to notate when outsourcing Douga to Overseas Companies.
In the Memo Column, write everything related to the cut. This includes things like Special Shooting Effects, Transition Effects, any Camera Work, and notes for the Douga, Finishing/Coloring, and Compositing Departments. Basically, any "need-to-know things" for the cut are written in this section.
If there isn't enough space in the Memo Column for everything needed, you can write extra information on a separate sheet and notate on the Timesheet: "Separate Instruction Sheet Included（別絵指定あり）."
However, since there are times where the Shooting Work is done without the Cut Folder at hand, it's better to write as much as possible in the Memo Column.
Indication for End of Cut. Always write it.
A horizontal line is drawn at both the top of the first frame where the Dialogue begins, and at the bottom of the last frame where it ends.
This range of Dialogue is known as a "Dialogue Board（セリフボールド）".
Above the uppermost horizontal line, write the name of the character who is speaking in that section. You can abbreviate the name shorter, but do not shorten to a single letter, as other Departments won't know who's speaking. (Circle the name to distinguish the Dialogue from other Audio parts in the cut.)
Write what's spoken in the Dialogue inbetween the horizontal frame lines. It's common to write it in Hiragana, and spaced every 3 frames so that it is easier to Lip Sync.
When doing Douga, draw both the Fixed Cel's（止めセル）and Blank Cel's（空セル）line indication all the way to the end. (Blank Cels use wavy lines, and Fixed Cels use straight lines).

★ *Many Timesheets are designed such that each sheet contains 6 seconds of film/animation. In cuts with more Layers than A-D, some studios have a 3 Second Timesheet to accomodate the increase in Cel columns.*

★ *Since Panchinko Machine Animations and Video Games use a 30 frames/sec Frame Rate, there are also 30-Frame Timesheets made for use as well.*



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## ■ Layout Paper and Frame（レイアウト用紙とフレーム）

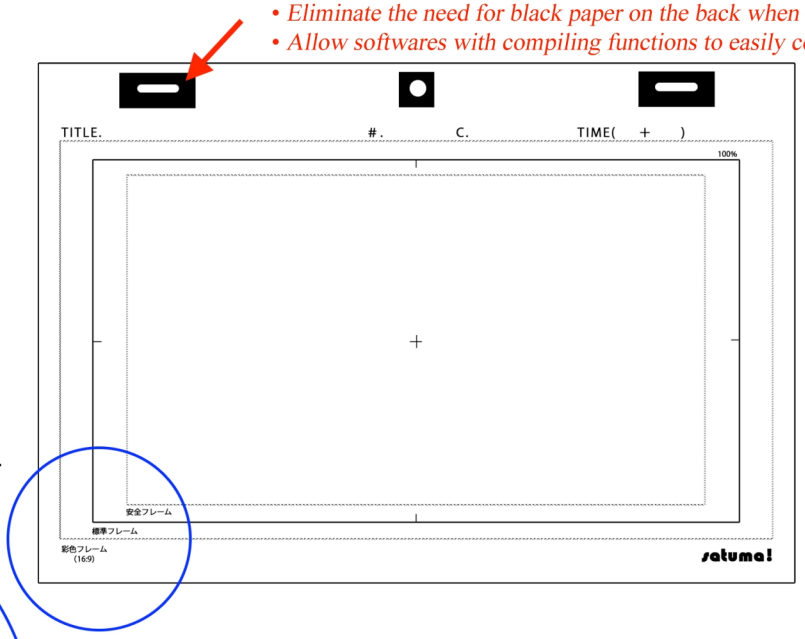
Layout paper with black frames is used to represent the screen composition (character's expression and acting, BG, and camera operation).
There is a field for filling the length and cut number, and 3 separate frame spaces (used for production processes). Refer to below.

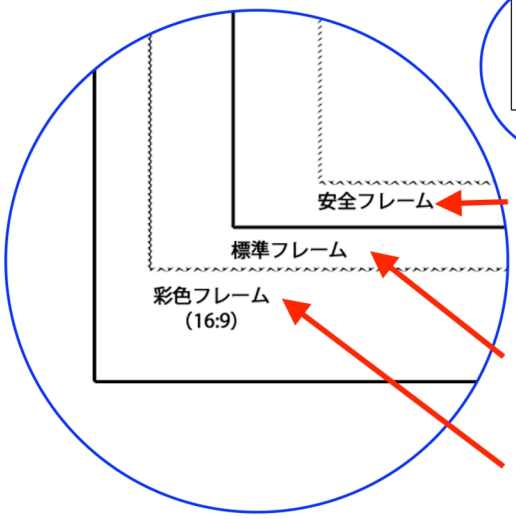
*The area around the Tap/Peg Bar is colored in order to:*
*• Eliminate the need for black paper on the back when copying.*
*• Allow softwares with compiling functions to easily compile.*

*Because the BG Artist doesn't use the timesheet, all relevant information gets written in the Layout.*
*(Water Shimmer, Blur Effect, etc. types of instructions are important to add as well.)*

*In a Follow cut, always indicate the speed and length of BG to prevent a short BG from being drawn, which requires a redo.*
*(In the event of modifications, don't forget to write the corrections.)*

★ **What is Layout?**
Layout is the blueprint for all animation work. It includes the position of the characters relative to the BG, and any camera work. It is abbreviated as L/O or LO.




**●安全フレーム (TV Frame, Safe Frame)**
This is a guideline for the area of screen that will show on every range and variation of screen type.
The area size is 10% smaller than the Standard Frame.
Keep all important information in this frame.

**●標準フレーム (Standard Frame, Shooting/Camera Frame)**
This is a guideline for the true shooting range.
This size is often dubbed "100 frame", or "100Fr".

**●彩色フレーム (Coloring Frame, Scan Frame)**
This is a guideline for the area used in coloring and drawing.
The area size is about 10% larger than the Standard Frame.

★ *There is no one size fits all for TV Frame and Standard Frame size. Each company and production has their own Layout paper, so use the specific template you are given when you are assigned the work.*

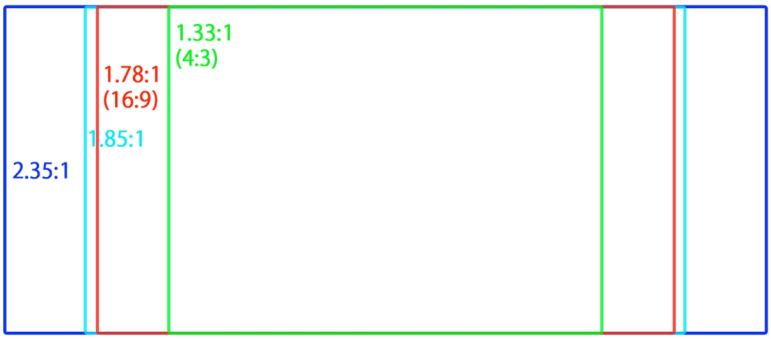
## ■ Main Screen Size • Frame Size（主な画面サイズ・フレームサイズ）

◆ **Standard Size (4:3 ratio)**
NTSC-Film Standard screen size.
The majority of old TV works are this.

◆ **Wide, High-Definition Size (16:9 Ratio)**
Standard screen size for HDTV.
The majority of recent TV works are this.

◆ **Vista Size (1.85:1 Ratio)**
This comes from Paramount's "Vistavision".

◆ **Cinema Size (2.35:1 Ratio)**
This comes from 20th Century Fox's "Cinemascope".



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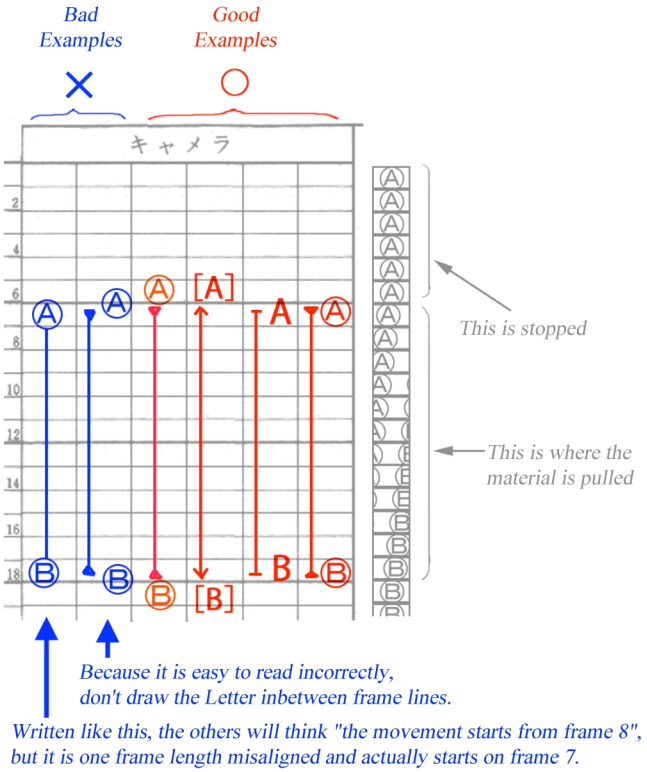
## ■ Range Indication of the Scope of Camera Work（区間のあるカメラワークの範囲指示）

There are two elements in the instruction: 1.) *Range Indication*（区間指示）using a *Line*（ライン）and an *End Point Symbol* (a symbol indicating which frame is the edge); and 2.) *Explanation* through writing.

The range *End Point* is not "the specification of the frame position", but the "camera work starting and ending frames". As long as the range is clearly marked, you can write it how you like.

Since something like (A) that you write near the *End Point* is a notation for the *End Point*, it doesn't matter if the *End Point* is on the side, above, or below any other position. Simply make sure it's easy to read.

Animators use characters like (A) because it helps keep the "feel of the Genga Sheet". The important part is the *Line* and the *End Point Symbol*. It is important each department understands the notations, so make sure you don't write them incorrectly.


Bad Examples
Good Examples
キャメラ
This is stopped
This is where the material is pulled
Because it is easy to read incorrectly, don't draw the Letter inbetween frame lines.
Written like this, the others will think "the movement starts from frame 8", but it is one frame length misaligned and actually starts on frame 7.

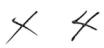
### ★Make the characters big and clear!★

You end up writing sloppily when you're in a hurry, but this will cause a mistake along the road if the next department can't read it. Be especially careful of the numbers you write in the sheet since the area to write in is small.

*Characters that are easy to misread:*

····· 1, 7, 9, Katakana イ

····· 2, 3, Katakana ア

 ····· X (used in coloring), 4

····· 4, 6

····· Somewhat Korean looking

★In any case, it would be nice if letters and numbers could all be written in a similar way, but due to repetition and inconsistent handwriting, there are times you can't distinguish them well.



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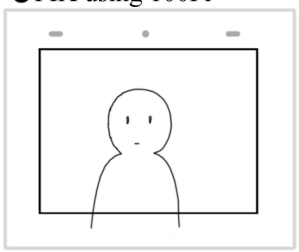
# 【Camera Work • Cel Work】

## ■ FIX（フィックス）

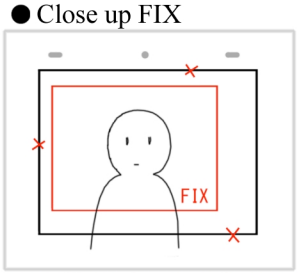
*FIX* means to shoot the camera from a 'fixed' or unmoving position. The position is usually from the Standard Frame, but fixes from a close up or larger format are possible as well.

*Fixes used in Frame sizes other than 100Fr need to be properly clarified.*
*In the case of a Dual-Use Cut（兼用）, Instructions sometimes get forgotten, so make sure to notate. (Ex: Shoot from B Frame)*

●FIX using 100Fr

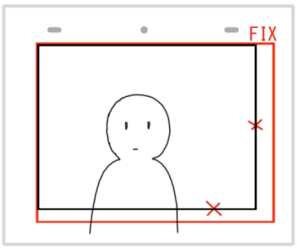


● Close up FIX



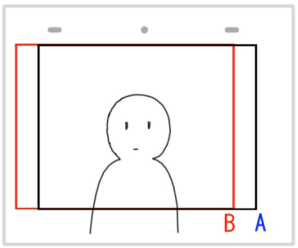

★*Put Xs on the unused Frame.*

● Pulled Frame FIX




★*Put Xs on the unused Frame.*

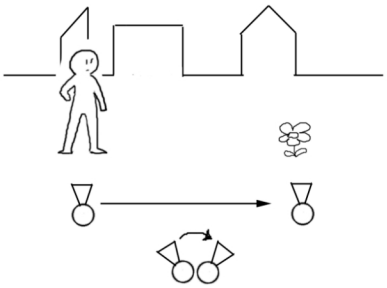
Dual-Use Cut（兼用）
● FIX with different Frames

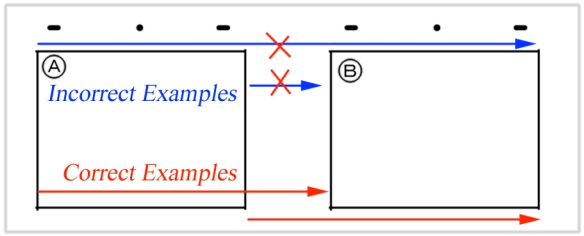



★*Notate each Frame.*

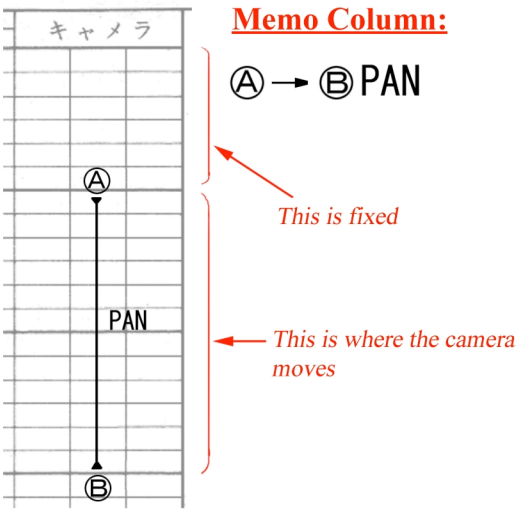
## ■ PAN（パン・PAN UP/PAN DOWN）

*PAN* comes from the word 'Panoraming'.
A PAN is a film technique in which the camera head swivels while the position is fixed to the ground.
In Animation, a parallel shift (or dolly) is called a PAN.
PANs can be both vertical and horizontal.






★*Draw arrows from corner to corner.*
*(Include both the direction and amount of movement.)*




★ Other kinds of PANs include:
QPAN(クイックPAN), Flash PAN(フラッシュPAN), Express PAN(急行PAN), Slip PAN(スリップPAN), and Rapid PAN(急速PAN).

★ A Flowing PAN or Rapid PAN is often used along with a Speed Line BG.



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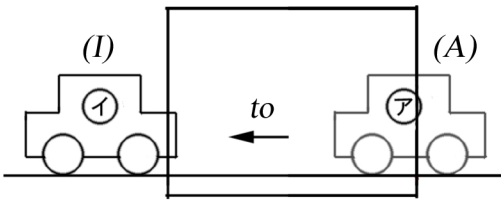
## ■ Slide • Sliding • SL（スライド・スライディング・SL・引き）

A *Slide* is a method of pulling the Cel or BG.

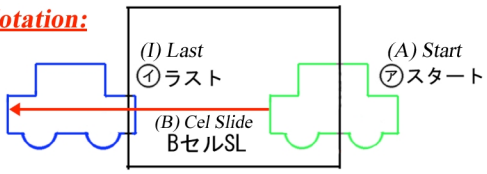
Make sure the drawing isn't outside the frame area.

For a *Slide with Gradation*（目盛りつき）, the notation starts from 1.

Normally, *Slide* is used in regards to Layout, so be clear that you write down further instructions if the *Slide* is in regards to the camera work.

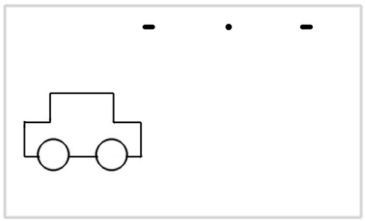



**Notation:**



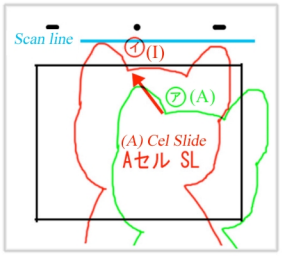

★*Notate with outlines to intuitively show the movement.*
★*Differentiate the Start and Last outline color so that even when overlapped, they are easy to see.*

**Genga:**

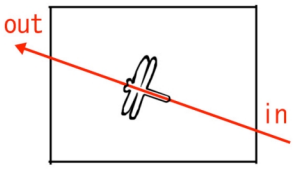


✕ *The drawing does not necessarily need to be at the Start or Last position, however, there are no benefits to having the drawing far away from the Tap.*
*(The paper needed is huge, and when drawing or scanning, it is easy for things to get misaligned.)*

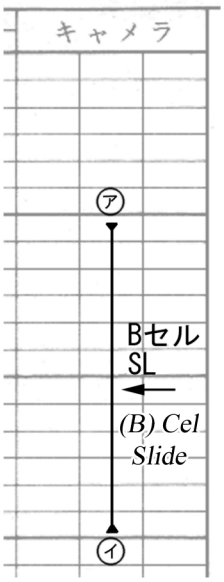
The *Slide* instructions used during the Film Era are not often used today because they are unintuitive and take more effort than needed.




★ *Write something like "Scan line" to ensure a whole Cel scan.*
★ *Anything near the Tap cannot be scanned in, so be careful!*




★ *For Slide in/out movements, draw a trajectory line and object outline along with a reference point.*
*(Reference point = a drawing point where none of the Cel will get cut off when scanned in.)*




**Memo Column:**

Bセルスライド　**(B) Cel Slide**
イ←ア　(A) to (I)

★*Specify the Cel name of the object*

*This is stopped*

*This is where the material is pulled*



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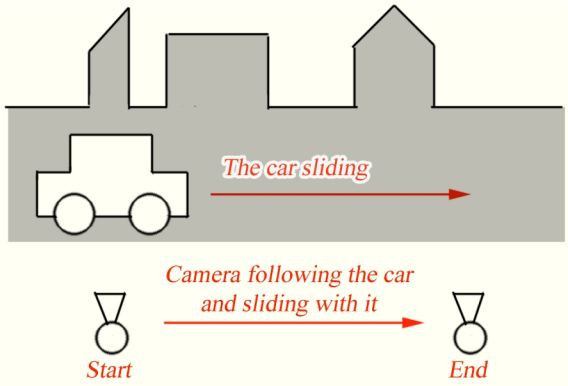
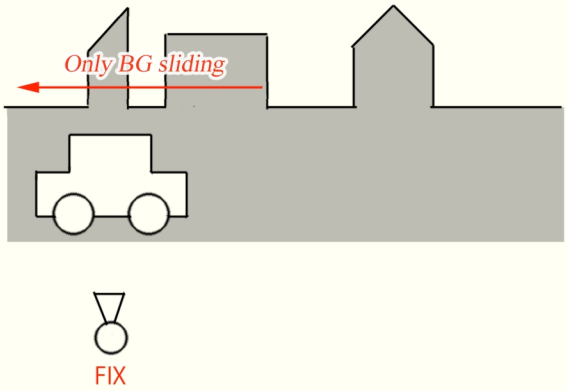
## ■ Follow • Daibiki • Tracking（フォロー・台引き・トラッキング）

*Follow* means to follow or 'go along with'.
This shooting technique involves moving the camera along with a moving target.
In short, it is something that moves in a certain direction at a constant speed.

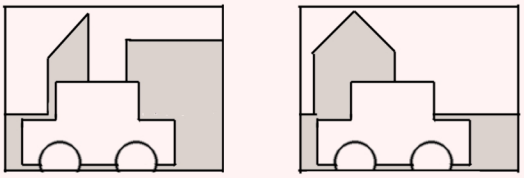
**Follow（フォロー）** (Film directing intent)
If the direction and speed are inconsistent, it is not a Follow, but a Gradation PAN（目盛りPAN）.
*A large BG is drawn, and the car is slid through it.*
*The camera is following along with the car.*




**Daibiki（台引き）** (Operation while shooting)
If the direction and speed are inconsistent, it becomes a Tsuke PAN（付けPAN）or Follow PAN.
*A large BG is drawn, which is then moved.*
*The camera and car stay in a fixed position.*




**Result:** The ending image of both methods is the same.




*The Follow arrow's direction points where the subject advances to, while the Daibiki arrow's direction points where the BG (or anything other than the subject) is pulled.*

*While the methods differ, the resulting meaning is the same.*

**Memo Column:**

*B Cel Follow* *3mm per Frame*
Bセル Follow 3ミリ／K
台

★ *Specify the object's (subject) Cel*

★ *Be sure to write the BG's（台）pulled direction*

★ *Because 'cm' and 'mm' are easy to misread, they aren't used. Instead, 'Milli'（ミリ）is written.*

**Memo Column:**

*BG, A Cel Daibiki* *3mm per Frame*
BG・Aセル 台引き 3ミリ／K

★ *Specify the object's Cel*

★ *Because 'cm' and 'mm' are easy to misread, they aren't used. Instead, 'Milli'（ミリ）is written.*

★ 1 Frame/3 Milli 「1K/3ミリ」 *can* be written this way, but it is easy to misread '1' and '/', so it's best *not* to write that (there's a risk of reading it as 1 Frame 13 Milli 「1K13ミリ」).
The instruction is "move 3 millimeters every frame", so the correct notation is 「3ミリ/K」.



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# ■ Tsuke Pan • Follow PAN（付けPAN・Follow PAN）

Along with Gradation PAN（目盛りPAN）mentioned on the next page, the terms are scattered throughout, so read carefully. Depending on the Studio, Tsuke PAN and Follow PAN are called Gradation PAN.

A *Tsuke, or Follow PAN,* is a PAN that matches the movement of the Cel's object.

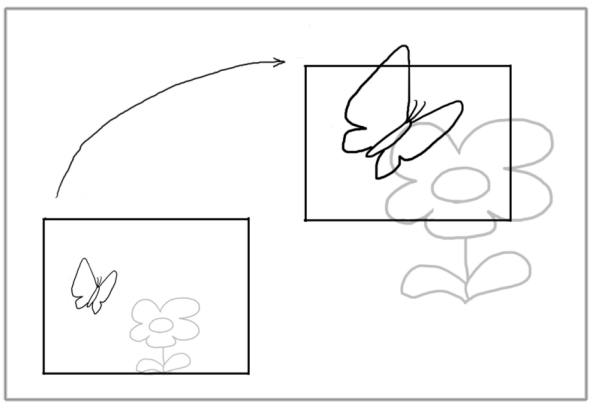
Keep the BG fixed (and Cels other than the object), and move the camera and object according to the specified gradation.

PAN the camera while attached to the object.
**The Cel (object) consists of regular sized drawings.**

Prepare the BG (and Cels other than the object) in a large format, and pull according to the Gradation specifications.

This type of PAN cannot be used when Kumisen（組線）is instructed between the Cel object and other objects. (In very specific cases it can be done, but it requires coordination with the other departments.)

If a T.U/T.B PAN is used in addition to the Tsuke or Follow PAN, the pulling instructions start from the center of the camera frame instead of a corner.



★Flicker フリッカー (or more correctly, Judder), is a disruptive afterimage on the Cel or BG during a PAN.

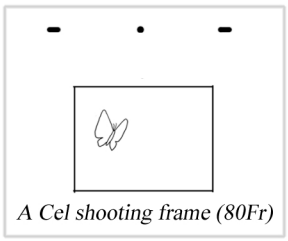
If a Gradation PAN is moving on 2s, and the BG and Cel(s) are moving at different timings, the frame rate movements become misaligned, and flickering occurs.

Post-production processes such as the *3:2 Pulldown Method* can also unintentionally add flickering to the finished shot.

A countermeasure to prevent flickering is to draw on either 1s or 2s instead of on 3s (Ex: if one second of animation equals 24 frames, each drawing is held for 3 frames). Then, set the Gradation PAN to be moving on 1s or 2s (the same as the Cels).

*The shooting instructions require 2 parts:*

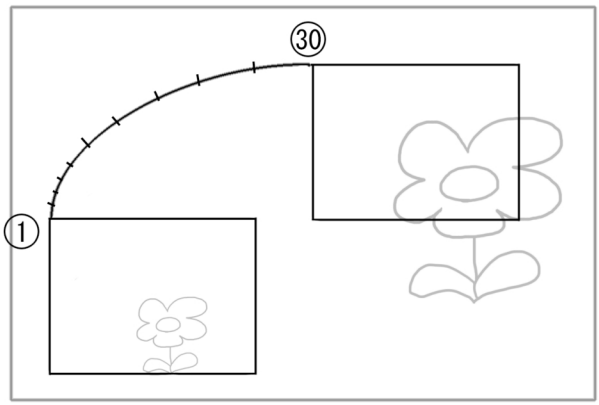
【Part1:】 *A Reference Frame for the object's Cel*



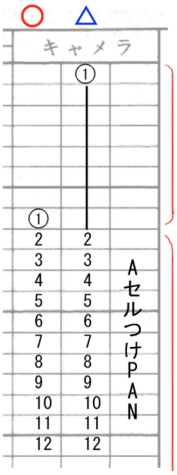
*A Cel shooting frame (80Fr)*

*Although 100Fr is Standard Size, create the specified shooting, and clearly write which Frame size gets attached to the camera*

【Part2:】 *The pulling instructions for BG, other objects, etc.*




*Best* ○ *OK* △




**Memo Column:**

*A cel* Aセル　*Tsuke PAN* 付けPAN

★ *Specify the object's Cel*

*This part is fixed*

*This is where the camera moves*



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## ■ Gradation PAN • Memori PAN（目盛りPAN・メモリPAN）

Along with Tsuke PAN and Follow PAN mentioned on the previous page, the terms are scattered all over, so be careful. Depending on the studio, Gradation PAN is called Tsuke PAN or Follow PAN.

A *Gradation PAN* is a PAN that matches the movement of the Cel's object.

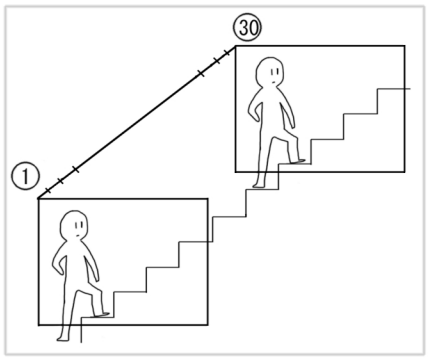
Keep the BG and Cel fixed, and move the camera according to the specified Gradation.

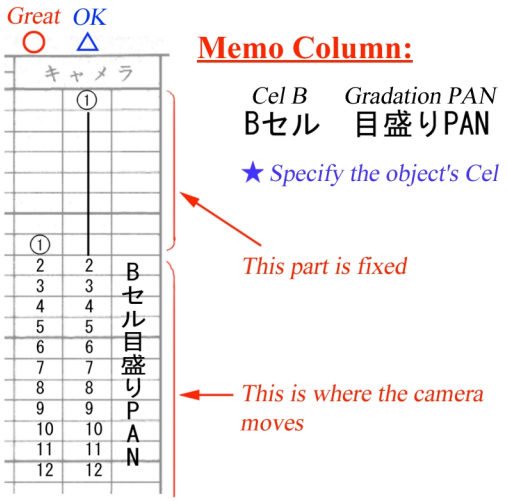
**The Cel and BG are prepared in a large format.**

Specify which Cel is fixed at which Tap/Peg Bar (or Frame).

Gradation PAN *can* be used even if Kumisen（組線）is instructed between the Cel object and other objects, however, be careful of flickering (see previous page term 'Flicker').

If a T.U/T.B movement is used in addition to the Gradation PAN, the pulling instructions start from the center of the camera frame instead of a corner.



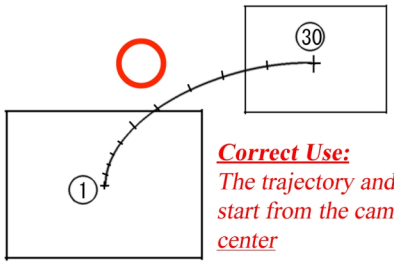
★ For example, one way to prevent flickering is to have the Gradation PAN on 2s like Cel A (left) has been written.

★ *If there is a Rotation 回転 or T.U/T.B in the cut, the Gradation Line must be at the center of the camera.*

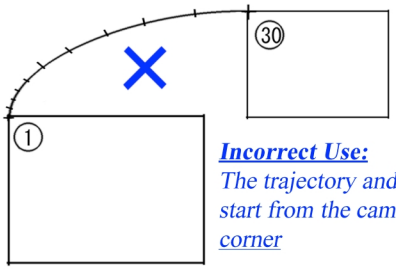
As a rule of thumb, apply the T.U/T.B or any rotation *after* matching it to the gradation line. If the line is in the corner, it can't be used properly.

Instead, copy, paste, & scale the gradation line, and put it at the center of the camera frame. While it's okay to have the line start from the corner for a linear trajectory (above), it cannot be done for a curved one.

If you're working digitally, you can fine tune the movement over and over again. For a Gradation PAN, the process becomes much smoother when the line is placed in the center of the camera during the beginning of the work.




***Correct Use:***
*The trajectory and gradation start from the camera's center*




***Incorrect Use:***
*The trajectory and gradation start from the camera's corner*



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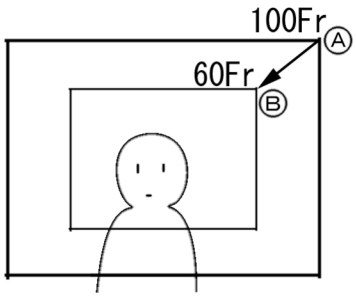
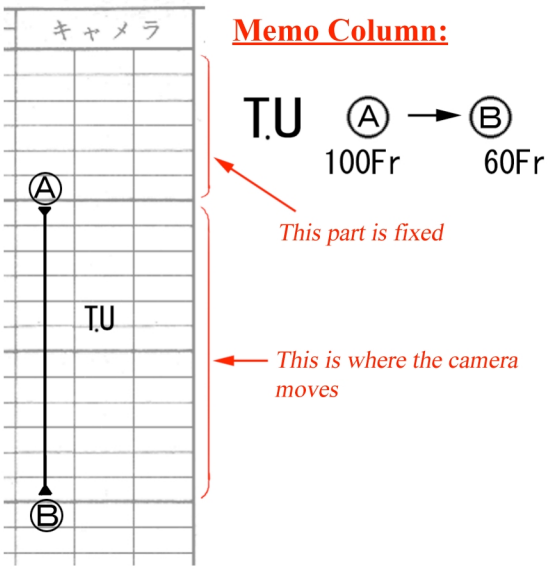
## ■ T.U/T.B ・Track Up/Track Back（トラックアップ・トラックバック）

*Track Up/Track Back* (T.U/T.B for short) is a shooting method where the camera moves closer to the object.

This is different from Zooming In, but because animation is flat, the result looks the same.

(If you make a Multi-Plane (マルチ), the result is different. This is because a Multi uses T.B/T.U for both the Cel and BG, but at different timings to simulate zooming in 3D).



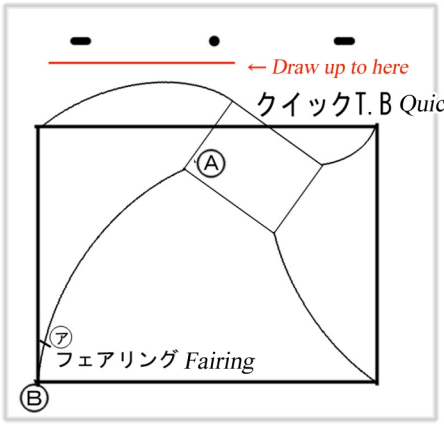

**Memo Column:**

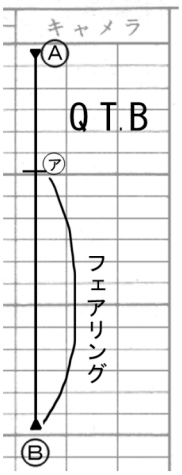
T.U Ⓐ → Ⓑ
100Fr 60Fr

## ■ Quick T.U/T.B（QT.U/QT.B・クイックT.U/T.B）

*Quick T.U/T.B* is a rapid T.U/T.B movement. Sometimes, rotation is added as well.

Fairing（フェアリング）is used to slow the camera movement to a halt near the end of the T.U/T.B.




**Memo Column:**

*Quick T.B*
クイックT.B Ⓐ → Ⓑ
20Fr 100Fr

*Instruction: Roughly indicate the point of Fairing within the T.B*

★Draw a rough curve where the expected growth and movement of the frame will be (caution points on the next page).

★Write a note such as, "Draw up to here"（ここまで作画）if you are worried about anything getting cut off accidentally.

Treat the starting point of the Fairing as an *In-between Reference*, as described above.

If you write the instructions as an entire frame instead of a small mark, the entire movement may get mistaken for two separate camera work parts. (Rookies or overseas animators may see the notation as part of line work drawings.)



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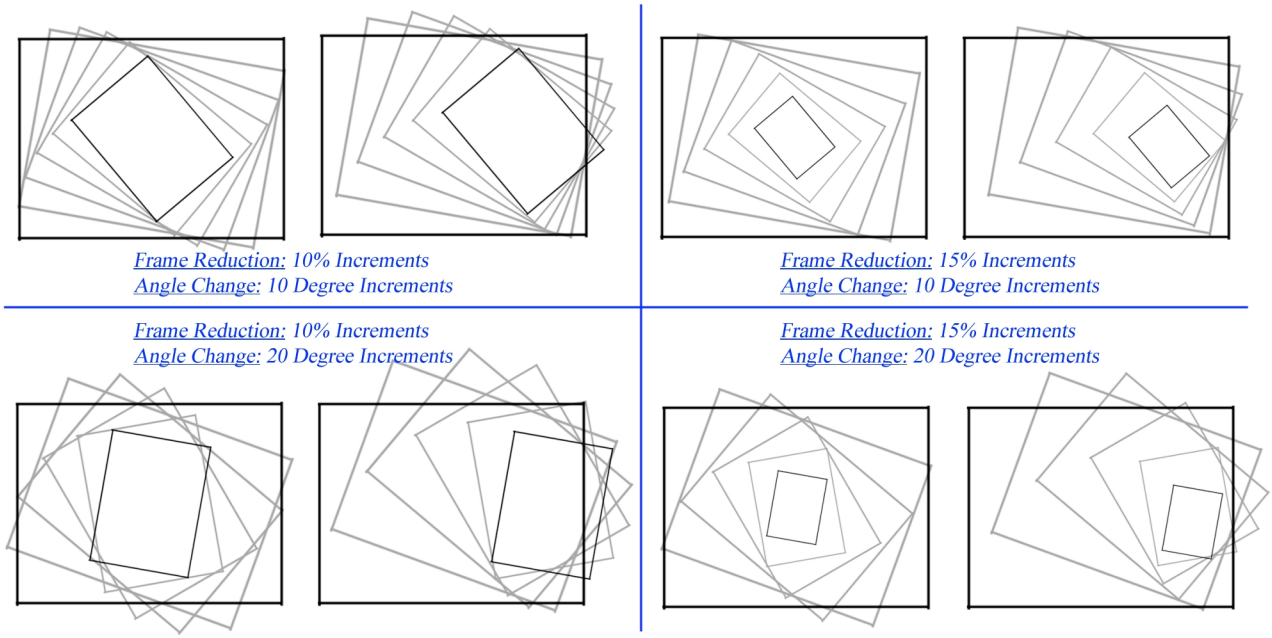
## ★ In a Rotating T.U/T.B (回転(かいてん)T.U/T.B), be careful of exposed areas outside of the Frame ★

*The Frame Trajectory during a Rotating T.U/T.B can sometimes be larger than expected.*

*It is not uncommon for a Retake to happen due to a Cel or BG being drawn at an incorrect exposure size.*

*Douga, Coloring, and Art Departments all work trusting the curve notated in the shooting instructions.*

*By correctly predicting the Frame Trajectory Exposure notated by the Genga-man, it is possible to reduce the number of Retakes required for the cut.* ***Refer to the examples listed below.***



*Frame Reduction: 10% Increments*
*Angle Change: 10 Degree Increments*

*Frame Reduction: 15% Increments*
*Angle Change: 10 Degree Increments*

*Frame Reduction: 10% Increments*
*Angle Change: 20 Degree Increments*

*Frame Reduction: 15% Increments*
*Angle Change: 20 Degree Increments*

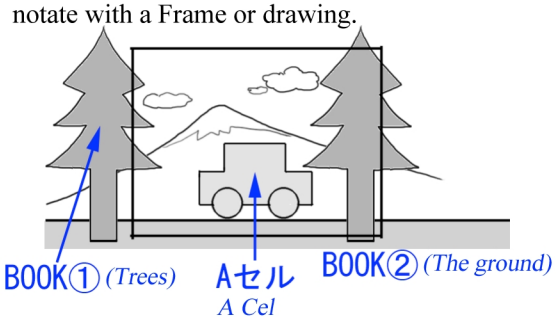
★ *As the closer frame approaches the edge of the pulled frame (deviating from the center), the Frame Trajectory increases.*

★ *If the closer frame's size doesn't get smaller, the larger Angle Change causes the Frame Trajectory to increase.*

## ■ Micchaku Multi-Plane Follow (密着(みっちゃく)マルチFollow)

A Micchaku Multi-Plane Follow involves multiple movements with different books and Cels.

If the Start and End have a clear positional relationship, notate with a Frame or drawing.



**Memo Column:**

*Micchaku Multi-Plane Follow*
密着マルチ Follow

| | Pull 引き | mm per Frame |
|---|---|---|
| BG | ← | 0.25ミリ/K |
| BOOK① | 引き ← | 2ミリ/K |
| BOOK② | 引き ← | 6ミリ/K |

★ *Specify the pulled direction*

★ *Write the units in Millimeter (ミリ)*



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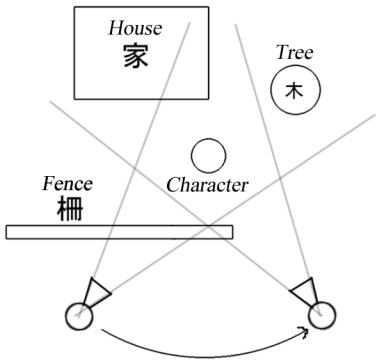
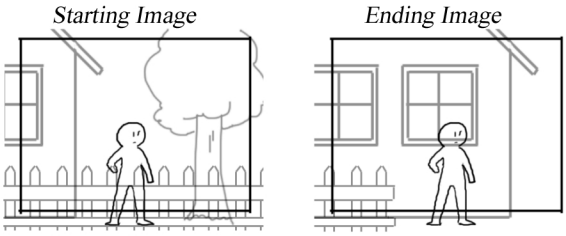
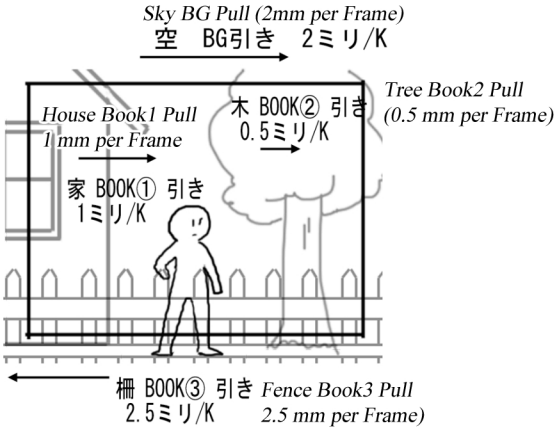
## ■ Micchaku Multi-Plane（密着マルチ・回り込み風）

*Micchaku Multi-Plane*, also called a *Rotating Tracking Shot*, uses a combination of Books and Cels moving in opposite directions at different speeds to give the illusion of the camera tracking around the center object (in this case, character) in a way which looks 3D.

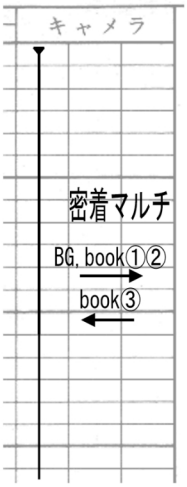
The farther away the Books/Cels are from the subject (either in the foreground or background), the faster they are pulled. A Planar Image (such as a picture taken with a Telephoto Lens) is also suitable for this method.




*Instruction: Clearly specify the pulling speed and direction of each object*




**Memo Column:**

*Micchaku Multi-Plane Rotating Tracking Shot*

密着マルチ　回り込み風

| | Pull 引き | mm per Frame |
|---|---|---|
| BG | → | 2 ミリ/K |
| BOOK① | 引き → | 1 ミリ/K |
| BOOK② | 引き → | 0.5 ミリ/K |
| BOOK③ | 引き ← | 2.5 ミリ/K |

★ *Specify the pulled direction*

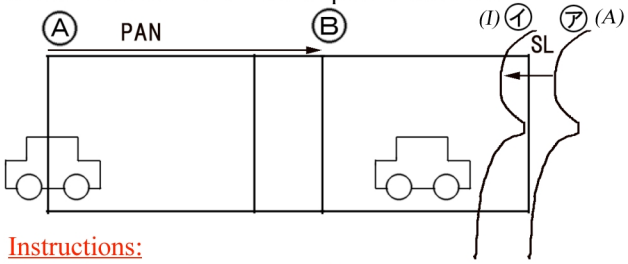
★ *Write the units in Millimeter（ミリ）*

## ■ Micchaku PAN • Micchaku Slide（密着PAN・密着SL）

*Micchaku PAN* is a camera technique that creates a sense of 3D by having objects near the camera slide while the camera pans.

Normally, the Micchaku instructions are written on the Layout.

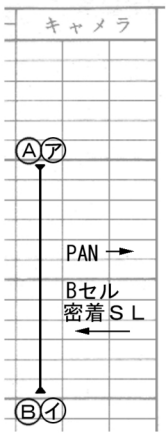
In the event of instructions for the camera, clearly specify which movement is for which part of the shot.




Instructions:

【*Part 1*】*Write the amount of camera movement*

【*Part 2*】*Within the Layout Frame, write the amount of movement for the character (object) that will Slide*




**Memo Column:**

PAN　Ⓐ→Ⓑ

*B Cel Micchaku Slide*　*(I)*　*(A)*

Bセル密着SL　㋑←㋐



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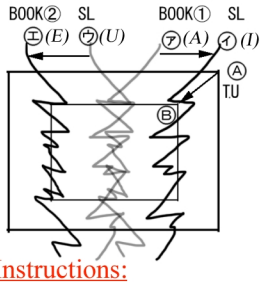
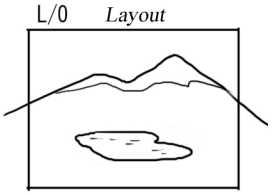
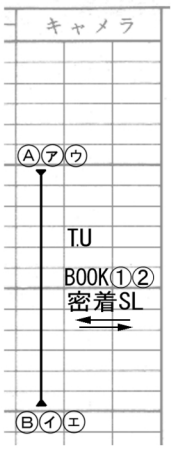
## ■ Micchaku T.U/T.B（密着T.U/T.B）

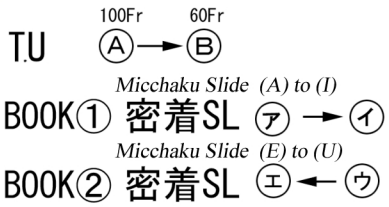
*Micchaku T.U/T.B* a method of combining a T.U/T.B camera move with material in the foreground that slides to produce a feeling of depth.




**Memo Column:**




Instructions:
【Part 1】*Write the amount of camera movement*
【Part 2】*Within the Layout Frame, write the amount of movement for the character (or object) that will Slide*

## ■ Multi-Plane T.U/T.B（マルチT.U/T.B）

*Multi-Plane T.U/T.B* involves the foreground material doing a Layer T.U/T.B while the camera is doing T.U/T.B. The result is a feeling of depth in the scene.

In Live-Action, this is the same as dollying in or out.

The result of this method produces a better 3D looking scene than *Micchaku T.U/T.B*, however, depending on the contents in the cut, the end result won't change much in look.

Depending on the animation work, the Coloring/Finishing Department gets burdened with the resolution issue resulting from a *Multi-Plane T.U/T.B*, so it's better to consider how the final product will look, and use the *Micchaku T.U/T.B* method instead.

### ★ What is マルチ? ★

マルチ (Multi) is an abbreviation of マルチプレーン (Multi-Plane).

It is a method of placing the BG, Cels, Books, etc. at all different distances away from the camera while shooting. Only one layer can be focused on.

If you create a Multi-Plane in the camera work, the focused part and T.U/T.B movements create a natural looking depth in the shot.

### ★ What is 密着(みっちゃく)? ★

密着 (Micchaku) is a method of camera shooting where every material is the same distance away from the camera but positioned such that the scene has perspective. Every layer is in focus.

### ★ What is 密着(みっちゃく)マルチ? ★

密着マルチ (Micchaku Multi-Plane) is a method of attaching the camera work to give the illusion of 3D by Sliding the materials.

*(In the Digital Era, there are Micchaku Multi-Plane camera shots with blurring instructions, but in the Film Era, I suppose that effect would be a Multi-PAN? Currently, however, there's no need to think so complex.)*



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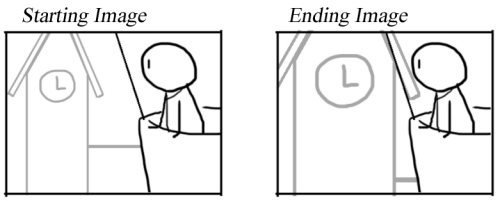
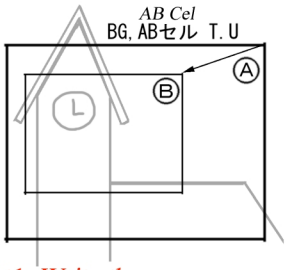
# ■ Gondola T.U/T.B（ゴンドラT.U/T.B）

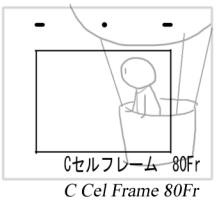
*Gondola T.U/T.B* involves splitting the material into Upper Parts and Lower Parts. The Upper Part keeps the same distance with the camera, while the Lower Part uses T.U/T.B, which looks as if the materials are getting closer.




*The upper part is fixed to the camera, while the lower part is doing a T.U/T.B.*



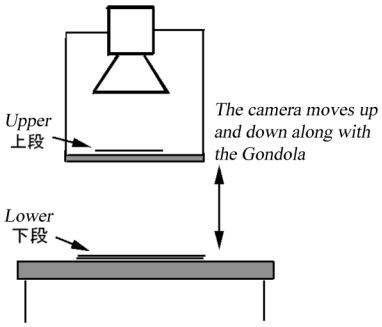

*Part1: Write the camera movement for the lower parts (BG, etc.)*

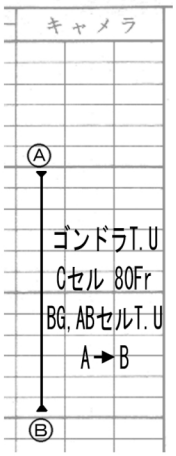



*Part2: Write the frame size for the upper part*

'Gondola' comes from the word for the device used with the camera set at the shooting table.

*Film Era Shooting Table Image*




**Memo Column:**

*Gondola T.U*
ゴンドラT.U

*Upper*
上段（Cセル）80Fr
下段（BG, ABセル）T.U
*Lower*
Ⓐ→Ⓑ
100　40Fr
（ピント：上段）
*(Focus: upper part)*

★ *Write instructions for both upper and lower parts, along with instructions for the focused part*

Since the assembly is a Multi-Plane, the focused material is clear while the other gets blurred. Since camera shooting became digital, it's possible to have a *Gondola T.U/T.B* that can focus on either one of the materials.

● In the actual shooting process, a *Gondola T.U/T.B* is the same as a *Layer T.U/T.B*, but due to the strong image the word has for the technique, it's still valuable to know. At the very least, knowing the term will help you picture the kind of image it will create.



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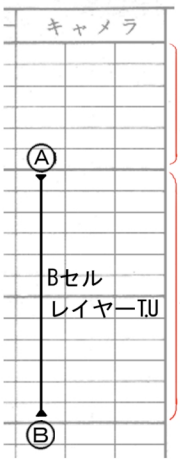
# ■ Layer T.U/T.B • Digital T.U/T.B（レイヤーT.U/T.B・DT.U/T.B）

A *Layer T.U/T.B* involves only one specific layer moving with T.U/T.B. This wasn't normally possibly during the Film Era.

Because the timing can be used with different animation timings (2s, 3s, etc.), it is good to use with a walking animation.

Since most everything is digital these days, it feels odd to call this technique *Digital T.U/T.B*, so it's recommended to call it *Layer T.U/T.B* instead.

(There is a thought that optical zoom and digital zoom have the same meaning digitally.)



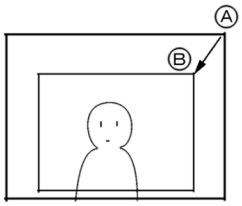

**Memo Column:**

*B Cel* Bセル　*Layer T.U* レイヤーT.U

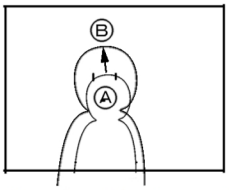
Ⓐ→Ⓑ

*This part is stopped*

*This is where the material is pulled*

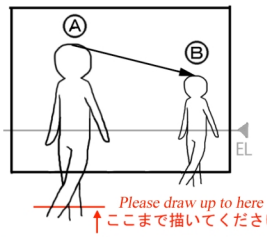



*Instruction 1a: Use frames for the instruction*




*Instruction 1b: Use outlines for the instruction* ★

★ *(1b Notes)*
*It's best to put the arrow on a clear point like the top of the head or the nose. Outlines that differ too greatly from the original drawing will cause a Retake.*
*It is the norm to draw in a larger size.*
*Be wary of Cel exposure (seen below):*




★ *In a case like this, a Cel exposure error is likely to occur when shrinking (in the event the eye level is within the image).*

*It's a good idea to clearly notate instructions like "Please draw up to here" such that when passed to the Douga and Coloring Departments, the range is properly understood.*

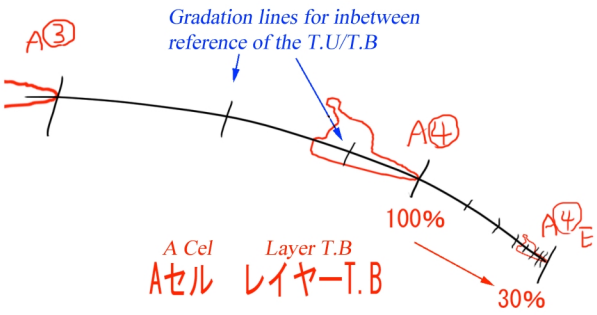
## ★ Things to be aware of with Drawings ★ and Layer T.U/T.B

There seems to be people who haphazardly rely on feeling only while writing down the instructions for a Layer T.U/T.B. No matter how much effort is given to fine-tune the inbetween instructions during the shooting, the drawings will not match the flow correctly.

Please have a firm understanding of perspective, and be extra careful when creating the material and designating the path it takes. A detailed plan is essential especially when a cut includes a walking or running scene.

Lastly, if the Douga-man cannot understand the intention of the Genga-man's plan, the instructions lose their purpose. (In truth this is the biggest problem)!

I suggest drawing a plan like the below for better communication when giving instructions to the Douga Department.



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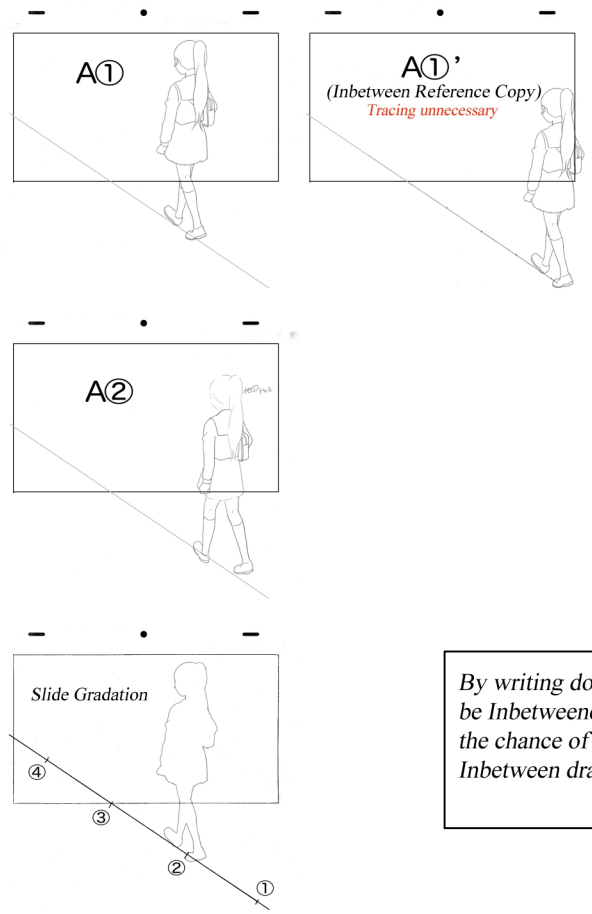
# ■ Jump Tap • Jump Slide（ジャンプタップ・ジャンプスライド）

A *Jump Tap* is a method of drawing one cycle (if walking, 2 steps) of animation, and then sliding the cycle as a whole to simulate a continuous movement.

In a walking cycle where the foot that touches the ground is inside the frame, using *Jump Tap* correctly will prevent a foot sliding motion.

(This method is used often at some companies, but other companies may be unfamiliar with it, so make sure to convey the instructions properly when assisting other companies and their work.)

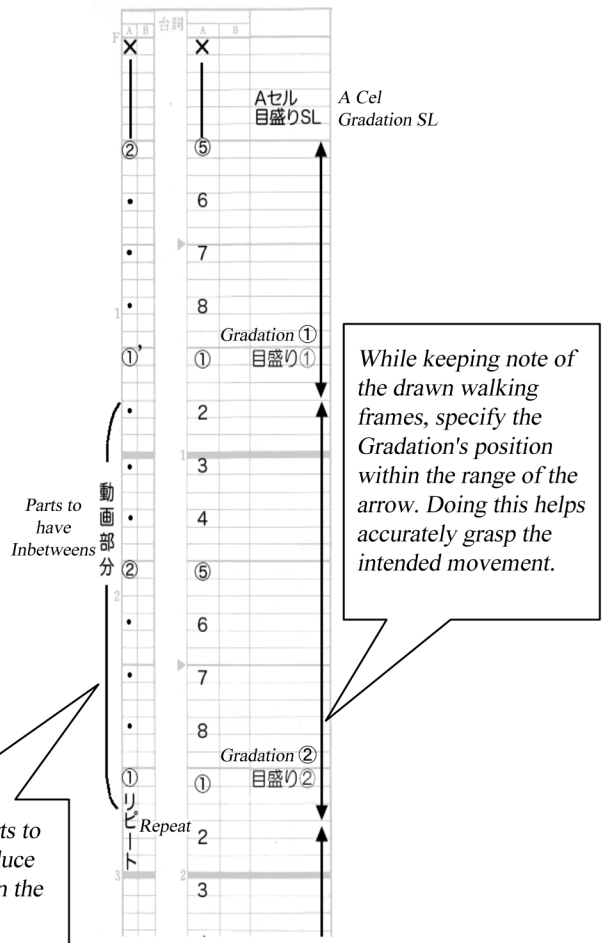



*When shooting, shift and move Key Frame ① to that of Reference ①' .*

## Memo Column:

*Example 1)* *A Cel: Gradation SL every 24 Frames*

*Example 2)* *A Cel: Slide every 2 steps (in 24 Frames)*


Aセル
目盛りSL
A Cel
Gradation SL
Gradation ①
目盛り①
Gradation ②
目盛り②
Parts to have Inbetweens
動画部分
リピート
Repeat
While keeping note of the drawn walking frames, specify the Gradation's position within the range of the arrow. Doing this helps accurately grasp the intended movement.
By writing down the parts to be Inbetweened, you reduce the chance of mistakes in the Inbetween drawings.

Be extra careful with the timesheet instructions when doing a 2 Step Layer T.U/T.B.

Even one gradation error can lead to Resolution Exposure of the drawings. While it's important to be aware of the Genga, *it's even more important to write clear instructions that the Douga Department can understand.*

Just tracing the Douga-man reference copy can lead to a danger of shifting everything.

### ★What is Resolution Exposure?★

*Resolution Exposure* is a term for when a drawing exceeds the determined resolution, which causes the drawings to look awry.

(Make sure the instructions are accurate, because the Finishing Department depends on both the shooting instructions *and* the timesheet while scanning.)



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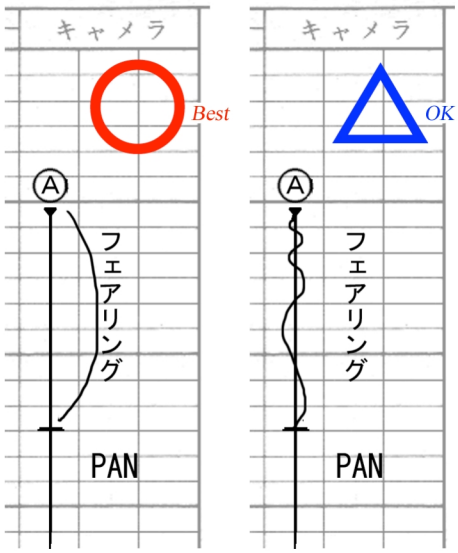
## ■ Fairing • Cushion（フェアリング・クッション）

*Fairing*, or cushion, is a method of adding acceleration/ deceleration at the starting and/or ending of a camera movement such as a PAN. It is included in the scope of camera work.

Even if you don't write it down, the Shooting Department may add the *Fairing* in, but it's easier to communicate the nuance if you write it down.

If *Fairing* is unnecessary, you can specify something like "Constant Velocity"（等速）instead.

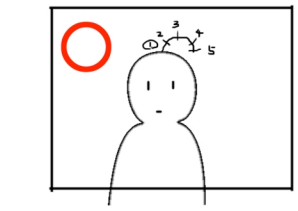
While writing down the notations for the camera work, wavy lines are unnecessary (since it looks similar to the *Screen Shake* notation).



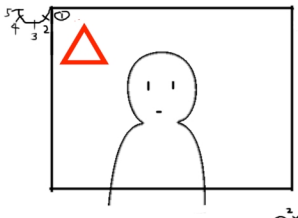

## ■ Rolling（ローリング）

*Rolling* is a method of movement where a specific layer or camera slides back and forth within a certain range to convey the movement.

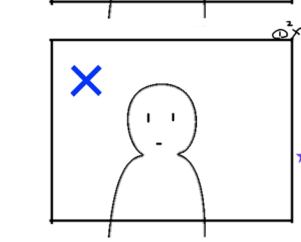
For example, *Rolling* is used for ship swaying, or for walking during a close up cut.



*Instruction 1a: the layer's movement instructions are above the Cel outline*

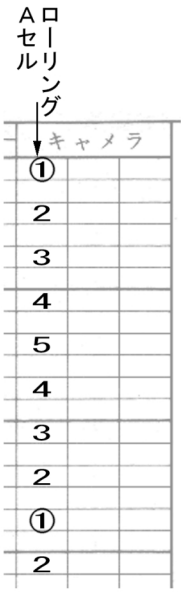


*Instruction 1b: the camera's movement instructions are above the frame*



*Incorrect Example: The layer's movement instructions are above the Frame*

★*Aside from the Shooting Department, the Finishing Department may also misunderstand the instructions and cause a Cel Exposure. Since this way is confusing, it is better not to use it.*




**Memo Column:**

*A Cel Rolling*

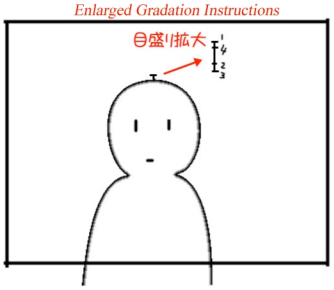
Aセルローリング

★*Specify the Cel name of the Object*

★*If the number for the beginning of the Rolling movement is circled, it is easy to understand*

*If possible, when writing the Gradation Line instructions, it's preferable to have a circle at the position of the first Key Frame*

*Enlarged Gradation Instructions*




★*If the Gradation Line instructions are too small to write properly, you can write an enlarged version of them off to the side.*



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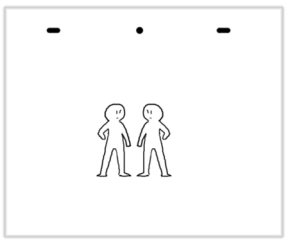
## ■ Reduction Paste • Enlarged Sakuga（縮小入り込み・縮小ハリコミ・拡大作画）

With the advent of HD, there has become a growing demand for drawings with the finest detail.

To meet this demand, *Reduction Paste* is done by drawing larger images, then shrinking them during shooting.

*Instruction: Write the specifications for the Reduction Paste position in the Layout*

★ *If the Enlargement Ratio (Reduction Ratio) is clear, it's best to paste a Reduction Copy, but a rough fit works too*



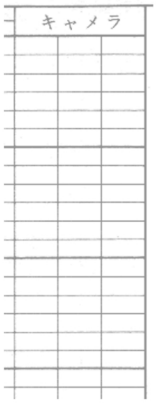
*Genga: The drawing enlarged*

★ *"HD" stands for High-Definition (in other words, a high degree of detail) in a digital television system or other screen system*

That said, it's not always best to draw as large as possible, knowing drawings can shrink. Large drawings make more work for the Douga and Finishing Departments. As the reduction ratio increases, the lines become thinner than the surrounding Cels and look weird.

Worst case scenario, the lines may look nonexistent (although it's possible to extract the lines and make them thicker later), so make sure to draw the *Enlarged Sakuga* at an appropriate size.

*(For HD, a 141% Enlargement ⇔ 70% Reduction is optimal, but you also have to consider camera work and other effects added to the cut.)*




**Memo Column:**

*A Cel* *50% Reduction Paste*
Aセル 50%縮小貼り込み
もしくは *or*
Aセル 200%拡大作画
*A Cel* *200% Enlarged Sakuga*

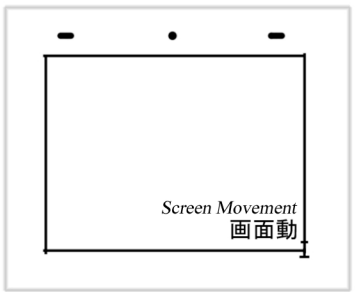
★ *Specify the Cel Name of the Object*

★ *Knowing the Enlargement Ratio (Reduction Ratio) is useful when deciding the resolution of the final product*

*(T.U/T.B cuts can be made using a calculated lower resolution than is normally used in all other cuts)*

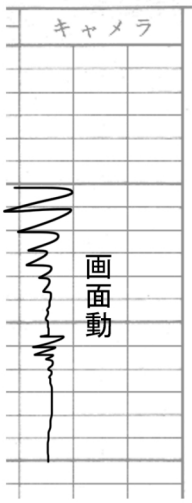
## ■ Screen Movement • Screen/Camera Shake（画面動・画ブレ・カメラシェイク）

*Screen movement* is a method where the screen is moved in small increments to express vibrations.
This type of camera shake is used for explosions, earthquakes, landing vibrations, and other random things.




*Instruction: Write the width range specifications in the Layout*

★ *When the Screen Movement is particularly large, it's important to make sure there isn't a BG or Cel Exposure in the cut*




**Memo Column:**

*Screen Movement (weak)*
画面動(弱)

★ *Write the strength and direction of the shaking movement*

★ *The wavy, scribble-looking lines in the Camera Section are important for conveying nuances in the movement*



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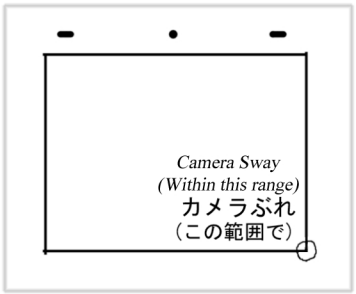
## ■ Handheld Sway • Camera Sway • Aerial Sway （ハンディぶれ・カメラぶれ・空撮ぶれ）

*Handheld*, or *Camera Sway*, mimics the look of shooting with a handheld camera. The trajectory is understood to an extent.

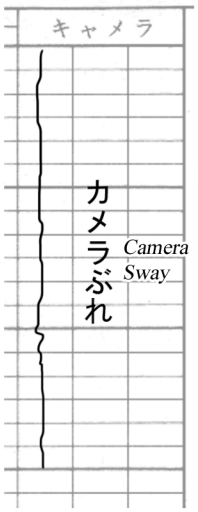
This technique gives the impression that the camera is not fixed to one spot.

(It's important the instructions can be distinguished from random *Screen Shake* movements.)




*Instruction: Write the width range specifications in the Layout*

★*When the Sway Width is particularly large, it's important to make sure there isn't a BG or Cel Exposure in the cut*




**Memo Column:**

*Camera Sway* *(Like a handheld camera)*
カメラぶれ(手持カメラ風に)

★*This is one way of conveying the nuances wanted in the Camera Sway movement*



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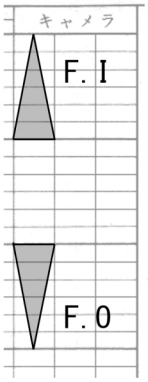
# 【Scene Transitions】

## ■ Fade In • Fade Out（フェードイン⇔フェードアウト・F.I⇔F.O）

This is a kind of scene transition that represents a passage of time or a change in settings.

*Fade In (F.I)* is when the screen changes from black to the current scene, while *Fade Out (F.O)* is the opposite.

Some call this *Black In (B.I)* or *Black Out (B.O).*
（ブラックイン⇔ブラックアウト）




**Memo Column:**

F.I

F.O

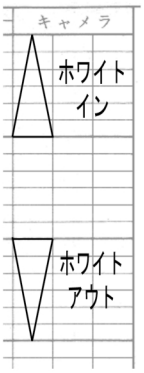
★ *If an entire Layer needs to Fade Out, write 'A Cel F.O'* 『Aセル F.O』

## ■ White In • White Out（ホワイトイン⇔ホワイトアウト・W.I⇔W.O）

This is a type of scene transition.

*White In (W.I)* involves the screen changing from white to the current scene, while *White Out (W.O)* is the opposite.

When the screen whites out as if there was excessive light exposure, the transition is called a *Glow Out*（グローアウト）.




**Memo Column:**

ホワイトイン *White In*

ホワイトアウト *White Out*

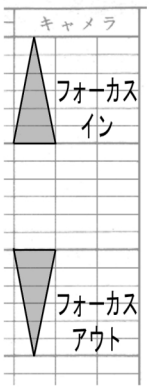
## ■ Focus In • Focus Out（フォーカスイン⇔フォーカスアウト）

This is another kind of scene transition.

It is used for long lapses of time, events in dreams, and other types of scenes.

*Focus In* involves an out-of-focus scene that becomes clear (or in focus).

Conversely, *Focus Out* is when the previously clear scene becomes blurry and unfocused.




**Memo Column:**

フォーカスイン *Focus In*

フォーカスアウト *Focus Out*



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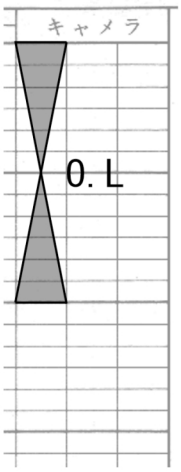
## ■ Overlap • Cross Fade（オーバーラップ・クロスフェード）

An *Overlap* is type of scene transition used to change from one Cut to another by overlapping both cuts, and then using *Fade In/Fade Out* gradually to reveal the second cut.

Fill in the Timesheet up to the *Overlap Margin.*




**Memo Column:**

0. L *Overlap*

c121 ⋈ c122

*Cut 121* (0+12) *Cut 122*

★ *Always write the length of the O.L*

★ *By having the corresponding Cut Number, the instructions are easy to understand even if an Unassigned Cut Number is inserted*

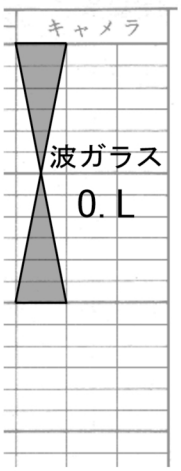
カット頭0. L (0+12)

*Beginning Cut O.L (0+12)*

## ■ Wave Glass O.L（波ガラス 0. L）

A *Wave Glass Overlap* is a type of scene transition which uses the *Wave Glass Effect* along with an *Overlap* together to transition to the next Cut.

Fill in the Timesheet up to the *Overlap Margin.*




**Memo Column:**

波ガラス0. L *Wave Glass O.L*

c121 ⋈ c122

*Cut 121* (0+12) *Cut 122*

★ *Always write the length of the O.L*

★ *By having the corresponding Cut Number, the instructions are easy to understand even if an Unassigned Cut Number is inserted*

カット頭 波ガラス0. L (0+12)

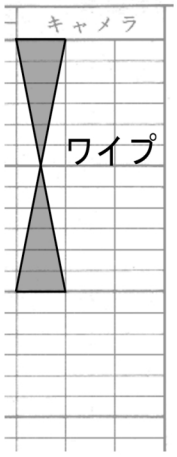
*Beginning Cut Wave Glass O.L (0+12)*

## ■ Wipe（ワイプ）

A *Wipe* scene transition 'wipes' the screen to change from one scene to the next. A *Mask* is used for the *Wipe.*

Fill in the Timesheet up to the *Overlap Margin.*

For special shaped *Masks*, other materials are needed.

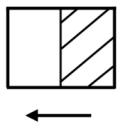



**Memo Column:**

ワイプ *Wipe*

c121 ⋈ c122

*Cut 121* (0+12) *Cut 122*



★ *Always write the length of the O.L*

★ *By having the corresponding Cut Number, the instructions are easy to understand even if an Unassigned Cut Number is inserted*

★ *Specify the Wipe's Shape and Direction*

カット頭ワイプ (0+12)

*Beginning Cut Wipe (0+12)*



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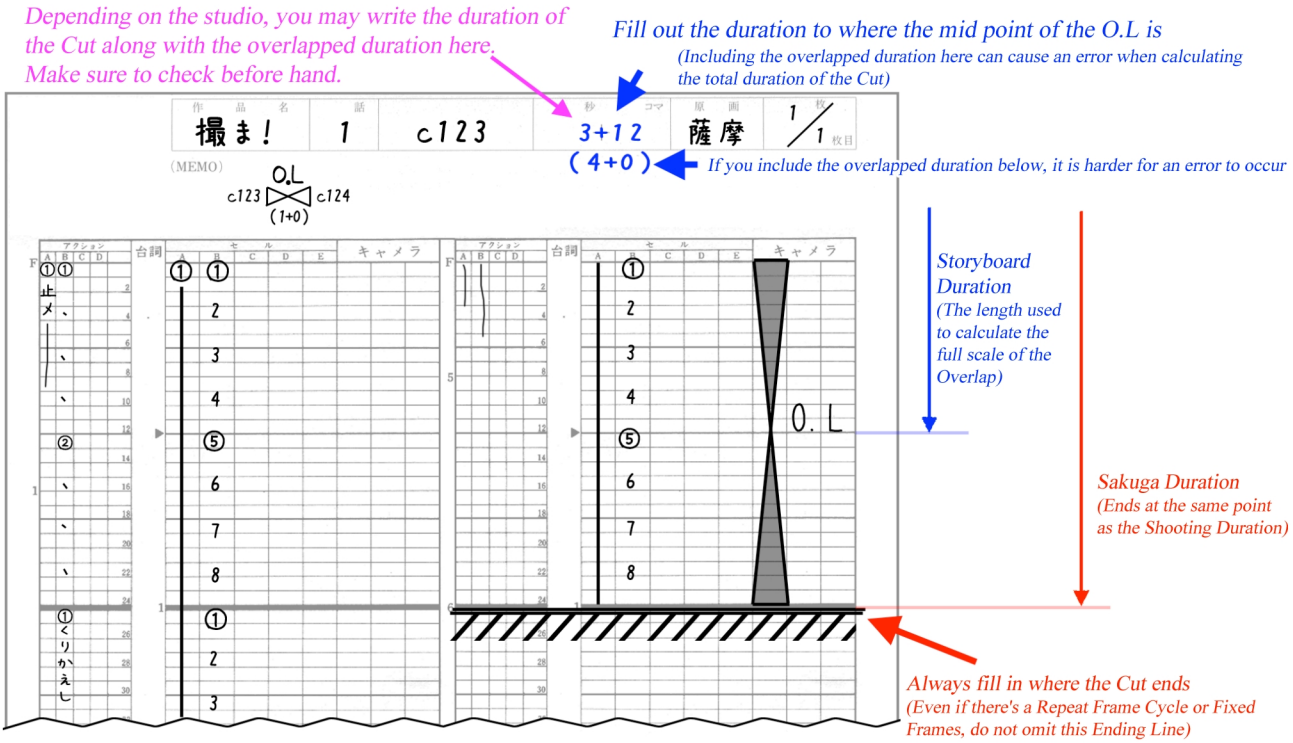
## ★ Things to be aware of when filling out the Timesheet for Overlap (O.L) and Wipe Transitions ★


Depending on the studio, you may write the duration of the Cut along with the overlapped duration here. Make sure to check before hand.
Fill out the duration to where the mid point of the O.L is
(Including the overlapped duration here can cause an error when calculating the total duration of the Cut)
撮ま！
1
c123
3+12
(4+0)
薩摩
If you include the overlapped duration below, it is harder for an error to occur
O.L
c123 c124
(1+0)
Storyboard Duration
(The length used to calculate the full scale of the Overlap)
Sakuga Duration
(Ends at the same point as the Shooting Duration)
Always fill in where the Cut ends
(Even if there's a Repeat Frame Cycle or Fixed Frames, do not omit this Ending Line)

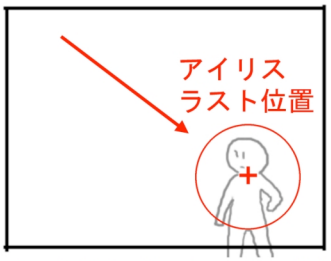
Always fill in the Timesheet up to the *Overlap or Wipe Duration.*

If the *Overlap or Wipe Cut* includes a pulled BG, there is a risk that a *BG Exposure* may occur since the *Storyboard Duration* is written in the *Layout* section. To prevent this, it's a good idea to note in the *Layout*: "To the Art Department, there is an *Overlap (O.L)* at the end of the Cut, so please extend the duration by (X) amount of Frames to account for that." (In Japanese, you would write: 「美術様へカット尻で0.Lがありますので〇コマ分長めにお願いします。」)

## ■ Iris In • Iris Out（アイリスイン⇔アイリスアウト）

*Iris In/Out* is a type of Scene Transition which implements a circular wipe in order to switch between cuts.

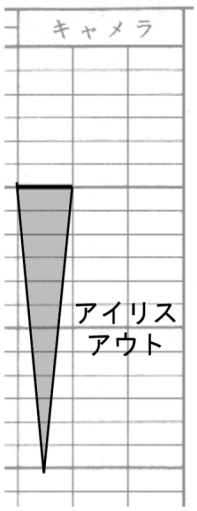
The *Mask* used is also circular shaped.




*Final position of the Iris*

*Instruction: Indicate where the center point (of the Iris In or Out) is within the Cut's Layout*

★ *When stopping the Iris at an arbitrary position, make sure that is specified*

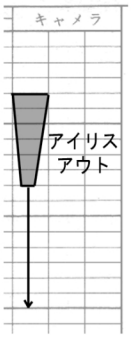



**Memo Column:**

アイリスアウト

*Iris Out*

★ *If the Iris Out stops in the middle, write it like the image to the right here so it's easy to understand*




**Memo Column:**

アイリスアウト
（ラスト止メあり）

*Iris Out*
*(Movement stopped afterwards)*



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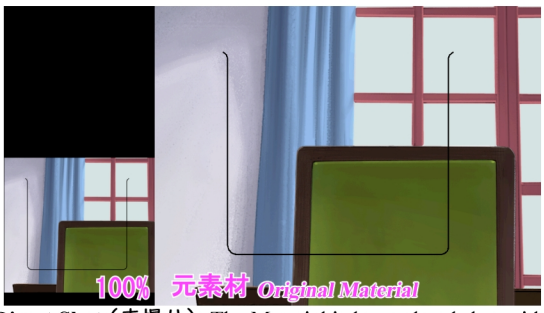
# 【Effects • Exposure】

## ■ Multiple Exposure（多重露光）& Differences Between Techniques

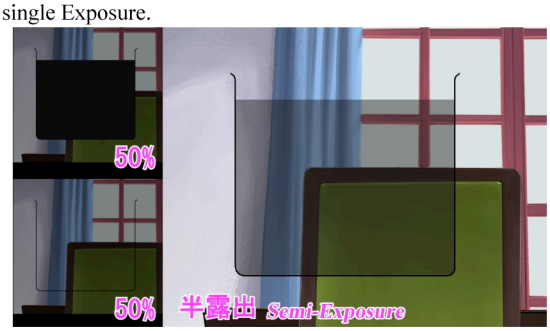
By exposing the Film more than once, you can create various expressions.

In today's Digital Era, using *Digital Processing Terms* may not always convey the correct information, so it's recommended to use the *Film Era Terms* instead.

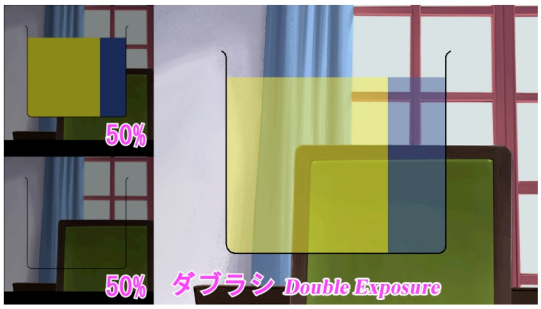
Leave the Digital Processing converting to the Finishing and Shooting Departments.



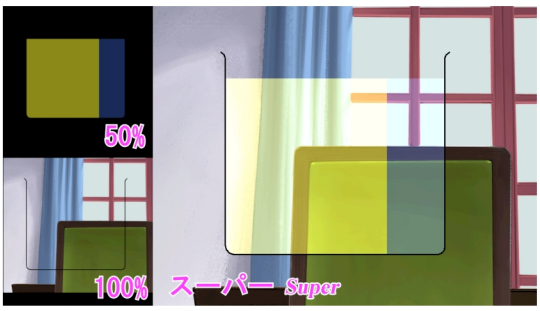

**Direct Shot（直撮り）:** The Material is layered and shot with a single Exposure.



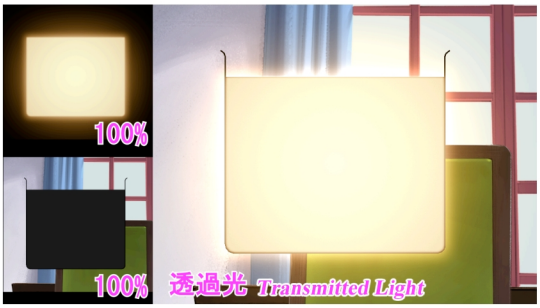

**Semi-Exposure（半露出）:** To make the correct Final Exposure, a double Exposure of the Material is done. Only part of the Mask is *Semi-Exposed.* This technique strictly differs from *Double Exposure (Dbl Exp).*



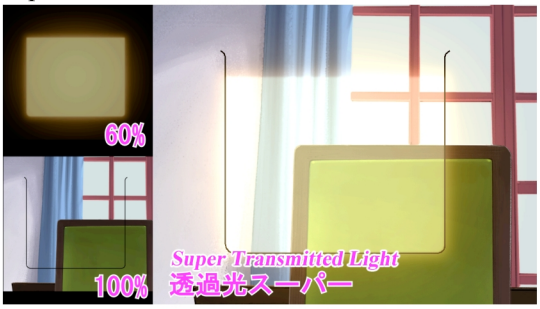

**Double Exposure（ダブルエクスポージャー・Wラシ・WXP）:** Abbreviated as *Dbl Exp*（ダブラシ）. To make the correct Final Exposure, a double Exposure of the Material is done. Since it is within the proper Exposure (compared to a *Super Over-Exposure*), the colors are able to be expressed well.




**Super（スーパー）:** Short for *Super Impose.* A strong light is expressed by exposing more than the proper Exposure. A *Super Subtitle*（字幕スーパー）also uses this technique. *Super Impose* results in a whitish tint due exceeding the proper Exposure.




**Transmitted Light（透過光）:** A strong light is expressed by exposing more than the proper Exposure. Since the underlying part is not exposed (the black part), colors can be expressed rather well. It is called *Transmitted Light* because only the applied light that passes through the Mask from below the Shooting Table is exposed.




**Super Transmitted Light（透過光スーパー）:** A strong light is expressed by exposing more than the proper Exposure. Since there is an image on the base part (instead of just black), the resulting look is that of a transparent light.

*(The percents used in the above explanations are only examples.)*



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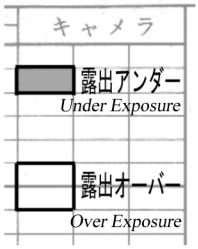
## ■ Under Exposure • Over Exposure（露出アンダー⇔露出オーバー）

*Under Exposure* is when a darker than normal image is shot at an exposure lower than the proper exposure.

*Over Exposure* is when a lighter than normal image is shot at an exposure higher than the proper exposure.




**Memo Column:**

露出アンダーあり *Under Exposure Insert*

★ *An expression such as "at the time of the explosion, Under Expose the BG" is OK.*

*(In Japanese:「爆発時 BGアンダー」)*

## ■ Subliminal Cut（サブリミナルカット）

Also called *Sublima*（サブリナ）for short, a *Subliminal Cut* involves the use of one or two extremely over exposed frames to express flashes of light.

When used frequently in quick succession, you must be careful of *Pokemon Check* (explained later).

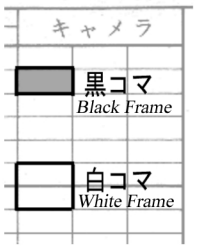
**Memo Column:**

サブリナあり *Subliminal Cut Insert*

## ■ White Frame • Black Frame（白コマ⇔黒コマ）

*White/Black Frame* involves a White (or Black) Frame that covers the entire screen. Like a *Subliminal Cut,* it's used as a visual shock for explosions or other effects. No materials are needed in the screen.

When used frequently in quick succession, you must be careful of *Pokemon Check* (explained later).




**Memo Column:**

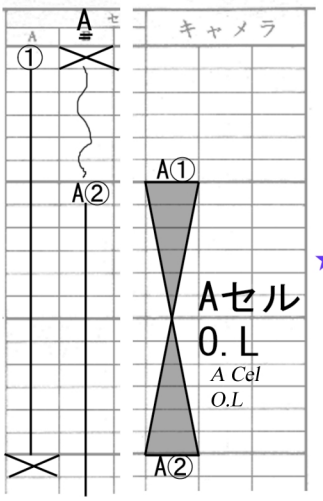
黒コマあり *Black Frame Insert*

## ■ Overlap Within Cut（カット内O.L・中O.L）

*Overlap Within Cut* doesn't involve one Cut connected to the other, but an o*verlap* of material within a Cut. It's used for things like changes in expression or color.

Make sure the materials to be overlapped are clearly specified.

(If it's not properly clarified for the Douga and/or Finishing Departments, the material will become defective.)




**Memo Column:**

カット内O.L *Overlap Within Cut*

A1⋈A2

★ *Specify the materials to be overlapped (O.L)*

BG1⋈BG2も同様

*BG1 & BG2 also similarly overlapped*



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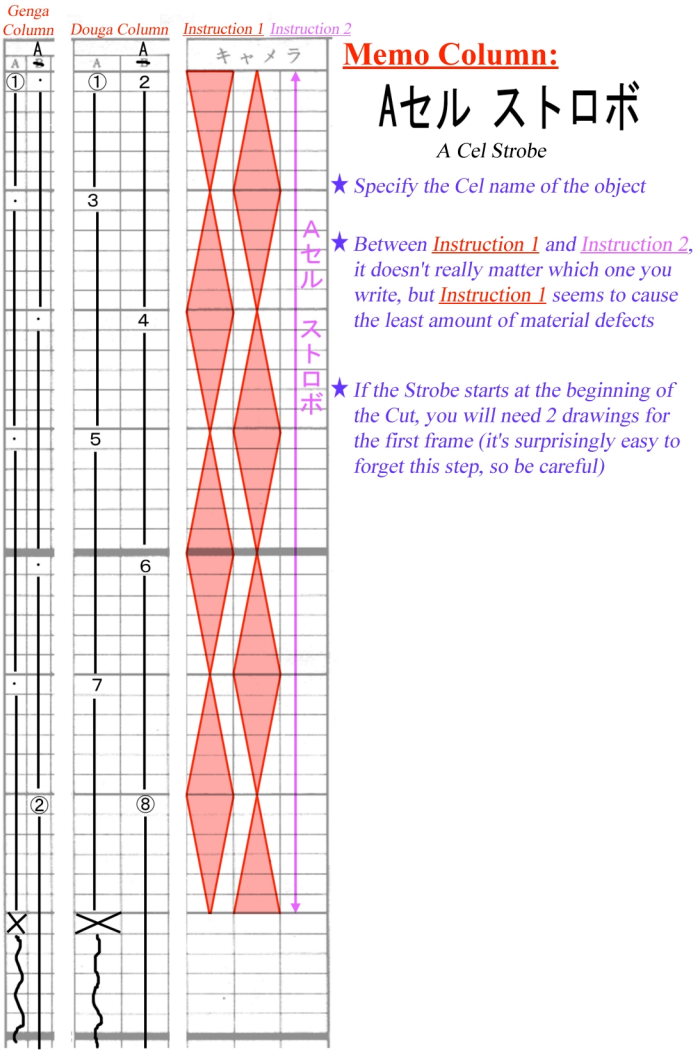
## ■ Strobe • Multiple Strobe（ストロボ・多重（たじゅう）ストロボ）

*Strobe* is a technique which uses a repeating overlap with afterimages to show gradual movement. This is often used for slow motion.

Normally, *Strobe* is done with 2 axes, but if you add another axis (or two), the afterimages also increase.

If using only the afterimage rather than a *Strobe*, write in the Memo Column something like: "Process afterimages for A Cel. Have each Drawing *Fade Out* in 12 Frames."

(In Japanese, write:
「Aセル残像処理。１枚につき12コマでF.O」)


Genga Column
Douga Column
Instruction 1
Instruction 2
キャメラ
Memo Column:
Aセル ストロボ
A Cel Strobe
★ Specify the Cel name of the object
★ Between Instruction 1 and Instruction 2, it doesn't really matter which one you write, but Instruction 1 seems to cause the least amount of material defects
★ If the Strobe starts at the beginning of the Cut, you will need 2 drawings for the first frame (it's surprisingly easy to forget this step, so be careful)
Aセル ストロボ



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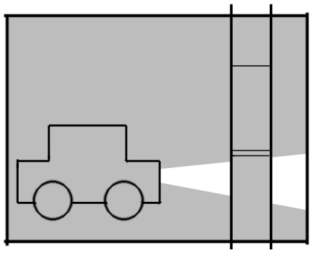
# 【 Effects • Processing 】

## ■ Light Beam • Beam（光芒（こうぼう）・ビーム）

A *Light Beam*, or simply *Beam*, is a vague area of light that surrounds the light source. This is often thought of as a *Lens Flare*, but it differs in that the beam of light hits the dust and moisture in the air.

Don't write the term as *Flare*, as it will be difficult to distinguish from the term below.

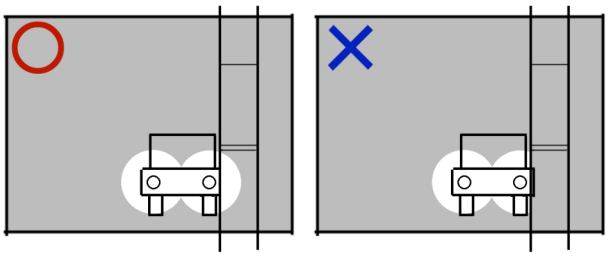


★ *Because the light hits the air, the light is blocked by objects in front*

## ■ Lens Flare • Flare（レンズフレア・フレア）

A *Lens Flare* is a type of fogging phenomenon that occurs when light that enters the camera lens causes unnecessary reflections. Either the whole screen, or just part of it becomes whitish and less clear.

*(The term,* Halation, *is sometimes used similarily to* Flare, *but* Halation *is different in that the phenomenon occurs on the base surface of the Camera Film.)*



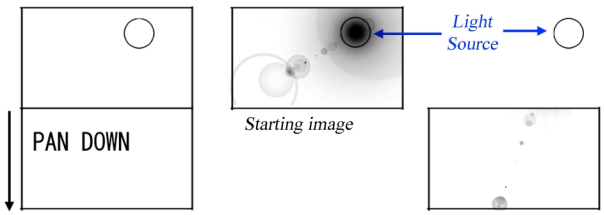
★ *Because the light hits the camera lens, the light isn't blocked by objects in front*

## ■ Lens Ghost（レンズゴースト）

*Lens Ghost* is a type of *Lens Flare* in which a relatively clear image (like a ring, or a ball of light) appears at symmetrical positions from the light source with respect to the center of the Screen.

As a general rule, the *Lens Ghost* extends from the light source through the Frame's center, and if the light source doesn't move relative to the screen, the *Ghost* doesn't move either.

However, since animation is embellished, even if the *Lens Ghost* doesn't pass through the center, it's not technically incorrect. (In short, it's fine since it's Anime.)



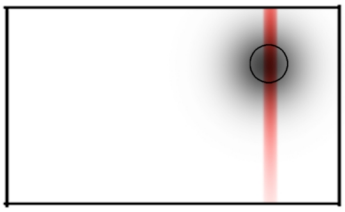

★ *As a general rule, Lens Ghost passes through the center of the frame*

## ■ Smear（スミア）

The *Smear Effect* is a phenomenon in which lines of light appear in a horizontal or vertical direction (the direction where the *Charged Coupled Device*, or CCD, is read).

This effect occurs only in video equipment that utilizes CCDs. The (relatively) strong light hits the CCD (imaging device), and the light overflows from a certain area of pixels. This differs from a *Lens Ghost.*

In Film Shooting, you could get a similar flare effect using a variocross film lens.





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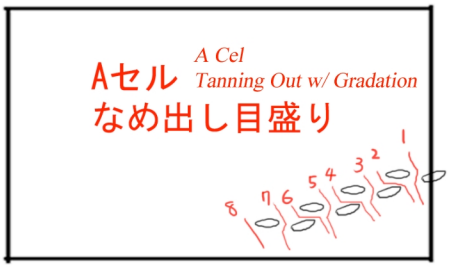
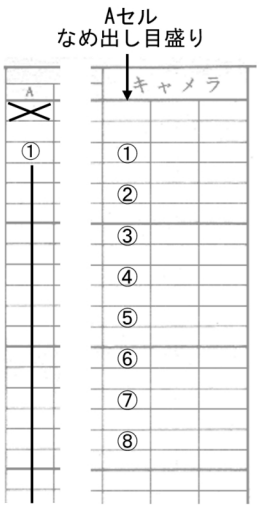
## ■ Erasing • Tanning Out • Wipe Out（消し込み⇔なめ出し・ワイプ出し）

*Erasing* is a method of shooting where part or all of the Cel is erased while shooting, and then the footage is played in reverse. Since becoming Digital, there's no need to reverse the video, so it's more commonly called *Tanning Out*（なめ出し）instead.
Examples of this technique include beach footprints or writing on a chalkboard.




*Instruction: Include the scope and gradation of the Tanning Out*




**Memo Column:**

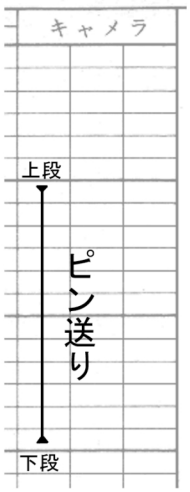
Aセル なめ出し *A Cel Tanning Out*

★ *Specify the Cel name of the object*

## ■ Focus Shift（ピン送り）

*Focus Shift* is an effect that involves changing the focus range gradually, from either the foreground to the background or background to the foreground.

To make the result more like Film Shooting, change the angle of view as well.




**Memo Column:**

ピン送り *Focus Shift*

*Upper Layer → Lower Layer*

上段 → 下段 *(C Cel)* *(BG, A, B Cel)*

（Cセル）（BG, A, Bセル）

★ *Specify the Cel name of the object*

## ■ Paraffin • Neutral Paraffin（パラ・NTパラ）

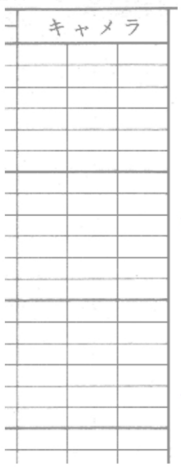
*Paraffin* (or *Para*, for short) is a technique putting *Paraffin*, an oily waxy substance similar to petroleum, in front of the screen to add shadows and light reflections.

Since becoming Digital, this type of e ffect can be applied to a single layer.

*Paraffin* used to blend in with the background is done by the Shooting Department without the need for written instructions (as a basic process for each project). If you intentionally want to include *Paraffin* in each cut, it's best to write the instructions for it yourself.

*Neutral Paraffins*（NTパラ）are achromatic.

A Film-Like *Paraffin* should be described as a *"Small Range Blur"*.
(In Japanese, it would be noted as: 「ぼけ足を短く」)




**Memo Column:**

青パラ

*Blue Para*

★ *If a color has been decided on, clearly state it*

Aセル パラ 原画に指示あり *A Cel Para (has specifications in the Genga)*

★ *A Para linked to a Cel needs specified in the Genga*



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## ■ Diffusion • Gauze • Scattered Light（ディーフュージョン・紗・散光フィルター）

A *Diffusion Filter* (or *DF*, for short), is a filter used to scatter light such that it appears softly blurred on the screen.

It's often used in evening scenes or imaginary scenes. Sometimes, a *Diffusion Filter* is applied to a specific layer.

**Memo Column:**

DF（弱）*Diffusion (weak)*

★ *If instructions for the strength need specified, make sure to notate it*

## ■ Foggy Filter • Foggy • FOG（フォギーフィルター・フォギー）

A *Foggy Filter* is used to mimic fog within a shot. Compared to *Diffusion*, the effect is whiter. This filter is used in bathing scenes or scenes requiring a foggy atmosphere.

In addition to being processed as a filter, this effect is also processed with depth of field.

**Memo Column:**

フォギー（弱）*Foggy Filter (weak)*

★ *If instructions for the strength need specified, make sure to notate it*

## ■ Cross Filter（クロスフィルター）

A *Cross Filter* is a filter that emits light in a cross direction.

It is mainly used for illuminations and delicious-looking food dishes.

**Memo Column:**

クロスフィルター

*Cross Filter*

## ■ Wave Glass（波ガラス）

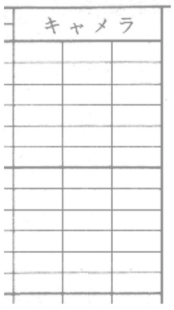
A *Wave Glass* is a method used to make either part or all of the screen shimmer in a wave-like manner.

In the Film Era, corrugated glass plates and plates coated with glycerin were placed in front of the lens to achieve the *Wave Glass* effect.

The effect is used to show air fluctuations due to heat, the movement of currents underwater, and if used as a *Wave Glass O.L* effect, to segue into a flashback.

Since effects became digital, some think that distortion is the same as *Wave Glass*, but the former is simply a waveform deformation.

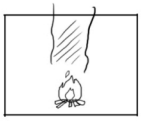
*Wave Glass* used in the Film Era was defined by its use of distortion, along with slight blurring and changes in brightness.




**Memo Column:**

波ガラス *Wave Glass*

（たき火のゆらぎ）*(Fluctuation of the bonfire)*



★ *Specify the range of the effect and any nuances associated with it*



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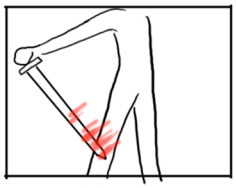
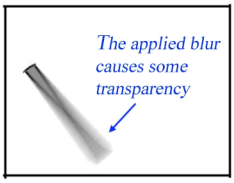
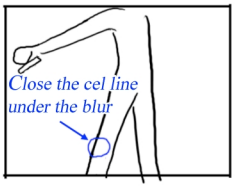
## ■ Blur • Motion Blur（ブラー・モーションブラー）

*Blur* is an expression used to blur some or all of the subject matter.
If an object is moving fast, the resulting effect will have a directional blur.
If you don't want the blur to apply to the part behind it, draw separate Cels.



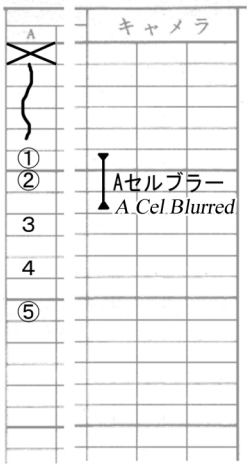
*Instruction: Include a rough indication of the blur in the Genga*




★ *If you don't want the other side of the blurred area to be affected, be sure to use separate Cels*

★ *Applying a blur will cause the bottom part to be transparent, so it's important you draw the entire Cel instead of leaving the gap open for Finishing to do*




**Memo Column:**

Aセル ブラーあり *A Cel has Blur*

★ *Specify the Cel name of the Object*

## ■ Bokeh • Focus • Focus Bokeh（ぼけ・フォーカス・ピンぼけ）

*Bokeh* is a Multi-Plane *Blur* that captures an out-of-focus state.
This technique is used on things that don't have a clear outline, such as smoke.
To distinguish *Bokeh* from *Motion Blur*, it's best to keep the two meanings separate from just 'Blur'.

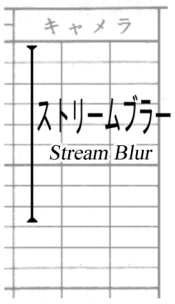
**Memo Column:**

BG　ぼけ（中） *BG Bokeh (Medium)*
Aセル　ぼけ（弱） *A Cel Bokeh (Weak)*

★ *Specify the Cel name of the Object, along with the applied Bokeh strength*

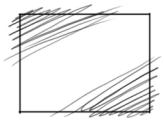
## ■ Stream Blur • Stream Line Blur • Grease Pull（ストリームブラー・流線ブラー・グリス引き）

A *Stream Blur* is a parallel line-like blur that mimics streamlines.
Separate streamline material can be used in tandem with the blur.
This method creates a sense of speed similar to wind rushing past.
It is also a useful technique in close-up scenes where the streamline BG material is barely visible to the viewer.




**Memo Column:**

ストリームブラー *Stream Blur*



★ *Specify the width and direction*



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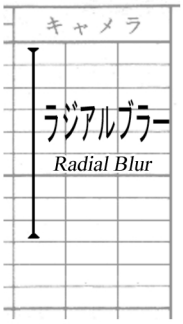
## ■ Radial Blur • Concentrated Blur • Radial Filter （ラジアルブラー・集中ブラー・ラジアルフィルター）

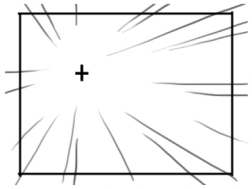
A *Radial* or *Concentrated Blur* is a method used to show speed and guide the eye to a certain point.
This blur uses concentrated stream lines, sometimes as a separate material included with the blur.
If the *Radial Blur* is done only with compositing, that's fine, but you should be extra careful if the BG or Cel has concentrated material.
If the vanishing point of the BG, Cel, etc. aren't unified, the cut will look off, so make sure to draw everything accordingly in the Layout.




**Memo Column:**

ラジアルブラー

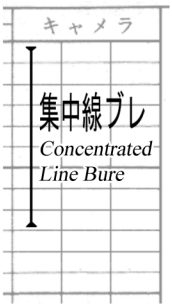
*Radial Blur*



*Instruction: If the entire BG is stream lines, make sure to indicate the vanishing point*

## ■ Concentrated Line Bure • Concentrated Line Touch （集中線ブレ・集中線タッチ）

A *Concentrated Line Bure* is a method used with linear materials similar to Manga art speed lines to show speed and guide the eye to a certain point.
Be careful not to confuse this technique with *Radial Blur* (above).
(The notes regarding the vanishing point apply the same here as they do for *Radial Blur*.)
Make sure to check in advance whether *you* are to create the material, or whether *Compositing* will.




**Memo Column:**

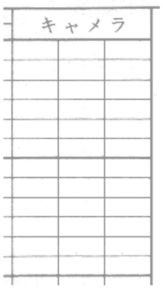
集中線ブレ（３枚パカ）

*Concentrated Line Bure (3 drawings variation)*

★*In the presence or absence of variation, the timing will also vary*

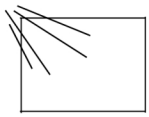
## ■ Incident Light（入射光（にゅうしゃこう））

*Incident Light* is an expression featuring shining light from outside of the viewable screen area.
This kind of light is used for depicting strong summer rays of sunlight, or the light from an off-screen explosion.
Although *Incident Light* is technically a type of lens flare, the term is grouped independently from it.




**Memo Column:**

入射光 *Incident Light*



★*Specify the direction or position (It's okay to include it in the Layout)*



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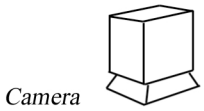
## ■ Transmitted Light • T-Light • T.L（透過光・T光・トーカ光）

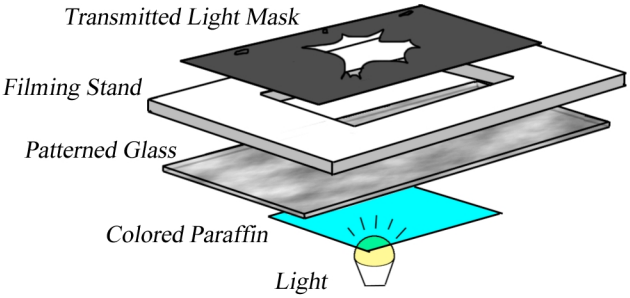
*Transmitted Light* is light that shines from below the *Filming Stand*, and only the exposed area of the *Transmitted Light Mask* passes through to the camera.

Refer to the *Multiple Exposure* section.




Currently, this entire process is produced digitally. Color can be added to the effect by passing light through a *Colored Paraffin.*

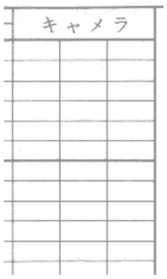
With a point light source, the center of the frame will have a stronger, whiter hue, while the edges will have a weaker, yet more saturated color. It's an interesting result to keep in mind when using a full frame *T-Light* or a widened *T-Light.*




## ■ Moire Transmitted Light • Silver Paper T.L • Patterned T.L（モアレ透過光・銀紙透過光・模様透過光）

*Moire Transmitted Light* is a technique that uses filters or patterned glass to create intricate patterns or designs in *Transmitted Light.*

Since going Digital, it's now possible to create a larger variety of these kinds of effects.




**Memo Column:**

Aセル炎 透過光 (黄～オレンジ系)

*A Cel Fire Transmitted Light (Yellow~Orange)*

★ *Specify the Cel name and Color*

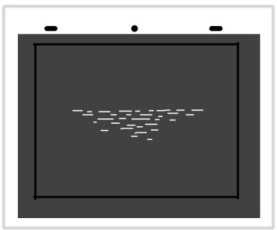
## ■ Pulled Sudare T.L • Glittering/Shining Waves • Glaring T.L（すだれ引き透過光・波チラ/キラ・ギラギラ透過光）

*Pulled Sudare Transmitted Light* is a technique used to add a glittering or shimmering light to a cut. When shooting with film, the effect was created by simultaneously pulling either various masks shaped like *Sudare* (Japanese furniture blinds), or simply patterned glass.

Digitally, there are several ways to create this effect. Using *Transmitted Light* for far away ocean shimmering is called *Glittering Waves.*

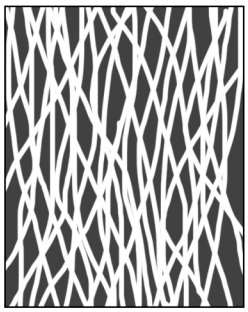
The base mask isn't usually necessary for ocean waves, but will often be required in cuts with treasure or a crown, where something clear is highlighted. However, it is best to check with the studio first before drawing anything.

*Material A: Base Mask*

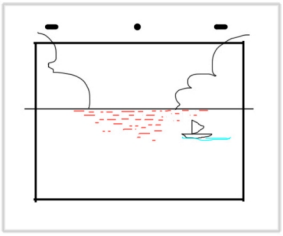


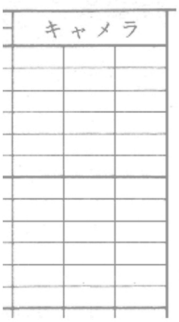
★ *Consult with the Production on whether the Base Mask needs drawn or not*

*Material B: Moire Mask*



*Specifications: Resulting Image*






**Memo Column:**

波チラ *Glittering Waves*

*A Cel Highlight, Transmitted Light (Pulled Sudare)*

Aセル Hi 透過光(スダレ引き)



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## ■ Lith Mask Transmitted Light（リスマスク透過光）

*Lith Mask Transmitted Light* is a thin ray of light no wider than the width of a single line, which makes it difficult to create by hand.

The effect utilizes lithographic film (a silver-coated halide photosensitive film used in the printing industry) as the base of the mask, instead of a Cel.

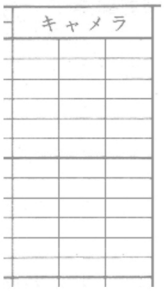
In Digital Compositing, the effect is essentially the same as regular *Transmitted Light*, but it helps to remember this term due to the atmosphere it creates.

## ■ Pin Hole Transmitted Light（ピンホール透過光）

*Pin Hole Transmitted Light* is an effect made by filming light that is transmitted through a tiny hole poked with a pin. This effect is used for things such as twinkling stars, or scattering sweat and tears.

It is also often used in tandem with a *Cross Filter* to create a *Cross Transmitted Light Effect.*

It's not necessary to neatly draw the cross in Genga; a rough sketch of the cross' range and amount can suffice. In other cases, only a single dot is required for the mask. Either way, it's best to confirm with the production.




**Memo Column:**

Aセル
ピンホール透過光
（星のまたたき）

*A Cel*
*Pin Hole T.L*
*(twinkling stars)*

★ *Specify the Cel name, color, or other nuances*



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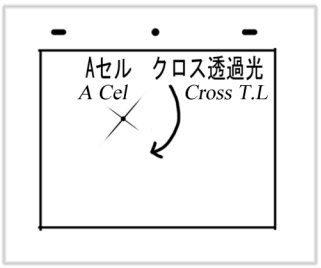
## ■ Cross Transmitted Light（クロス透過光）

*Cross Transmitted Light* is a light effect where a *Cross Filter* is added to a *Pinhole T.L.*
Multiples of this effect are called "Kirakira". An example of this effect can be seen in the 1988 Anime, 'Let's Go! Anpanman' when Baikin Man gets launched into the sky.




*Instruction: Write the Cross T.L's position and max size*

**Memo Column:**

Aセル
クロス透過光(青系)

*A Cel*
*Cross T.L (Blue)*

clockwise

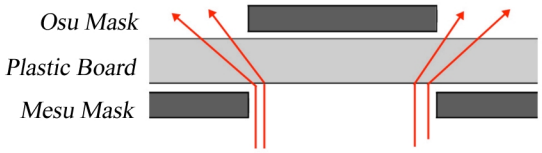
２回転くらい
or
○コマで１回転

*About 2 Rotations*
*or*
*One Circular Frame Rotation*

★ *Specify the Cel name, rotation direction and speed, and the color*

## ■ Whiteboard Transmitted Light • Theresa Light（白板透過光・テレサ光）

A *Whiteboard Transmitted Light* is light with directivity.
A clear, white acrylic (or plastic) board is inserted between Osu/Mesu Masks, and the light is transmitted towards the outsides (or insides).




A *Whiteboard T.L* is used to express dim, glowing light that surrounds the outline of a character. Since the character's Cel can be used as the mask, no special materials are needed.

This effect is also dubbed *Theresa Light,* as the character, Theresa, in 'Farewell to Space Battleship Yamato' was always clad in light.

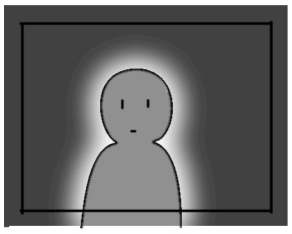
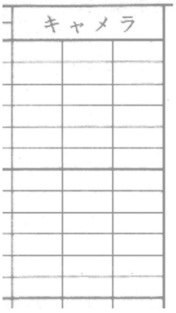


*Image of a Whiteboard T.L*




**Memo Column:**

Aセル 白板透過光
(青白系)

*A Cel Whiteboard T.L*
*(Blueish-White)*

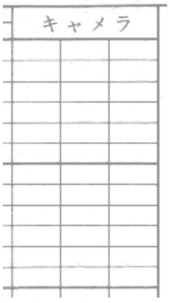
★ *Specify the Cel name and color*

## ■ Aura Transmitted Light（オーラ透過光）

*Aura Transmitted Light* is a T.L with directivity.
The effect is made by utilizing a *Wave Glass* with a *Whiteboard T.L* to produce a shimmering light.

This effect is used to express auras, such as those in the Anime, 'Saint Seiya', where characters who harness their Cosmo Energy glow with a unique aura effect.

Sometimes an *Aura T.L* may need to be drawn as a mask material, so make sure to confirm with the production.




**Memo Column:**

Aセル オーラ透過光
(黄色系)

*A Cel Aura T.L*
*(Yellow)*

★ *Specify the Cel name and color*



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## ■ Slit Scan（スリットスキャン）

*Slit Scan* is a technique where a piece of pitch-black paper with a thin slit cut in it is placed between the subject and the camera. When filming through the slit, only a part of the image becomes exposed.

If the camera shutter is open while the slit is moving at a constant speed (and either the subject is moving or the camera is doing a T.U.T.B movement), the subject will look unnaturally distorted.

The first usage of this technique was in the 1968 film *2001: A Space Odyssey.*

Since this term is difficult to explain in text form, I recommend searching online for a video explanation of it.

## ■ Tyndall Effect（チンダル現象）・Crepuscular Rays（薄明光線）

Tyndall Effect *is a light phenomenon where light that is shone through aerosol, colloid, or another kind of matter is scattered by the tiny particles, which causes the resulting light path to look uniformly shining.*

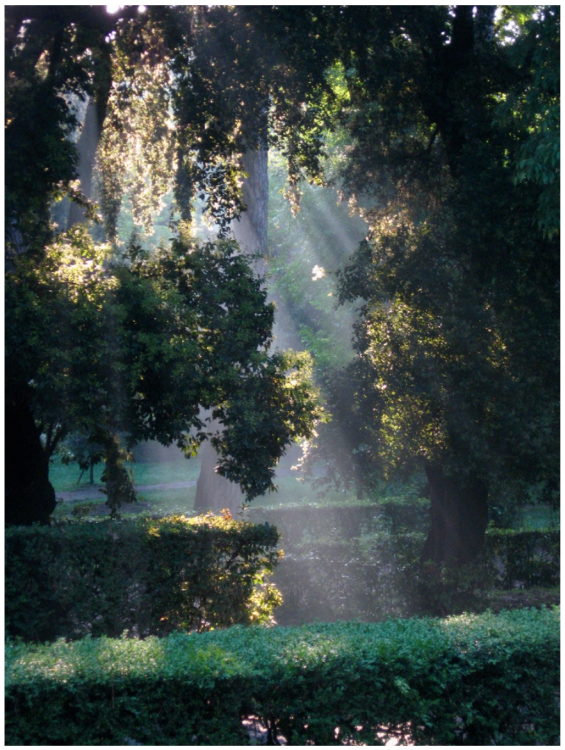
*When minute particules of an equal or lesser wavelength than light are dispersed throughout a transparent material, the light shone through it gets scattered, and visible light rays can be seen.*

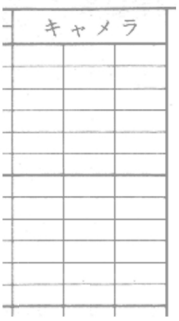
...The above is a complicated explanation, so, to put it simply, *Tyndall Effect* is a phenomenon where visible light can be observed in streaks, such as when lighting a dusty area (by projector or spotlight), or when light is filtered through foliage in a humid location (such as a forest with morning mist).

Streaks of light that stretch downward from inbetween the clouds above are called "Angel's Ladder" or "Jacob's Ladder", and are a type of *Tyndall Effect.* These sunbeams are also referred to as *Crepuscular Rays.*

Since the *Tyndall Effect* term isn't universally known, it's important to write an easily understood additional note such as "please add dirt within the light".
*(In Japanese, it would be noted as:*「光の中にホコリください」*)*

Explosions or other bright light effects make good use of it. Often times, when the *Black Brush Effect* (described on the next page) is used in tandem with *Tyndall Effect*, the shooting instructions emphasize the clearer black brush material. (Ex: Flare + Black Brush)






**Memo Column:**

チンダル現象
（カーテンの隙間からの光と埃）

*Tyndall Effect*
*(Add dust and light coming through the gaps in the curtains)*

★ *Specify any nuances*



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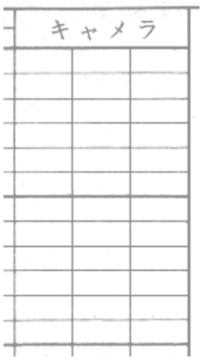
## ■ Black Brush（黒ブラシ）

The *Black Brush* Effect is named after the brush material that emphasizes the shadows made in tandem with the light from a *Tyndall Effect.*

While it *can* be made from scratch in compositing, hand-drawn materials have a more effective look and thus are more preferable.
*(This is due to the flexibility it offers the animator, such as if they want the material to be stronger in one area, or withheld from the face.)*

It's recommended to draw the *Black Brush* material based on where the *Tyndall Effect* can't reach.
Because this material is easily recognizable, it's referred to by this name instead of *Tyndall Effect.*

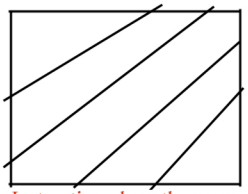



**Memo Column:**

**Bセル 黒ブラシ**

*B Cel Black Brush*

*Image of a Black Brush (red parts)*

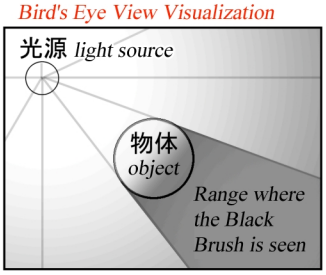


*Instruction: draw the sun rays' lines in perspective*
★ *make sure the lines accurately align relative to the BG*

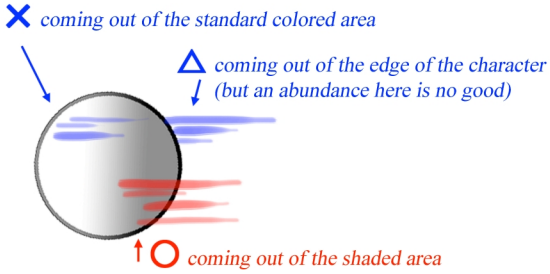
*Drawing: draw the Black Brush on a separate piece of paper*
★ *Keep the perspective of the sun rays in mind*

If the material needs to match the light from the BG, make sure to properly notate the center point or radial perspective in the Layout. This will prevent any discrepancies from occuring.

*Bird's Eye View Visualization*




*Side View and the Placement of the Black Brush effect*


coming out of the standard colored area
coming out of the edge of the character
(but an abundance here is no good)
coming out of the shaded area

*Example With Only the Compositing Process*

If creating the *Black Brush* effect entirely through compositing, it can be made by doing a similar process to the above (this is a simple example).



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